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THE AGRICULTURAL STUDENT

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CHRISTMAS NUMBER

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There are Three Important Reasons Why Cows Should be Clipped:=====

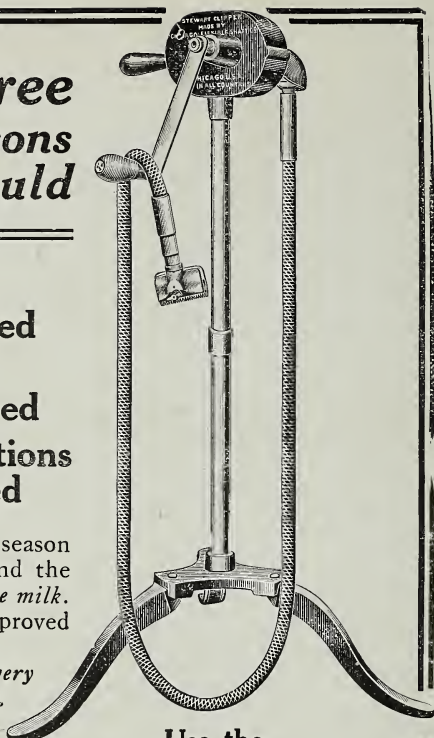
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Clip off the long coat twice a season—in the spring and summer—and the cows *keep healthier and yield more milk*. Thousands of dairy farmers have proved this.

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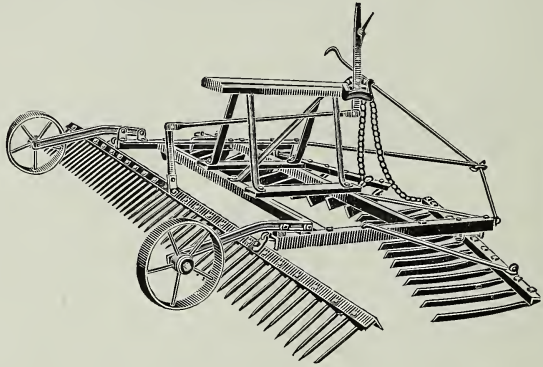
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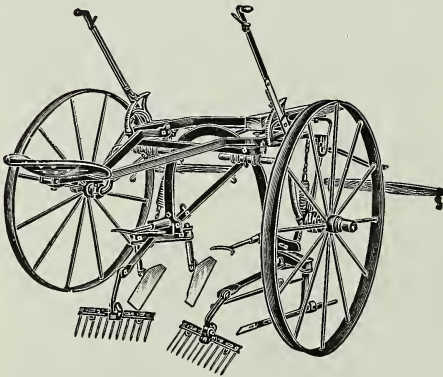
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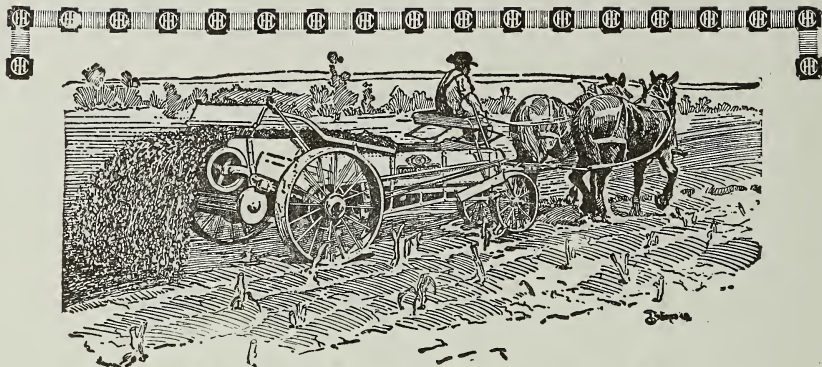
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WASHINGTON C. H., OHIO.



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ON the spreaderless farm the thought of the great heaps of manure piling up constantly in barn yards, stables, and stalls, is a gloomy one. Those piles mean much disagreeable and hard work. Three times every bit must be handled. It must all be loaded onto high wagons. It must be raked off in piles in the fields. Then every forkful must be shaken apart and spread.

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And, far more important, if you buy an I H C spreader one ton of manure will go as far as two tons spread by hand, with the same good effect on the soil, and it will all be spread evenly.

I H C Manure Spreaders

are farm necessities. The man who uses one will get the price of it back in increased crops before its newness has worn off.

I H C spreaders are constructed according to plans in which every detail, every feature, is made to count. They are built to do best work under all circumstances, and to stand every strain for years. They are made in all styles and sizes, for small farms and large, low and high machines, frames of braced and trussed steel. Uphill or down, or on the level, the apron drive assures even spreading, and the covering of corners is assured by rear axle differentials. In all styles the rear axle is placed so that it carries near three-fourths of the load. This, with the wide-rimmed wheels with Z-shaped lugs, makes for plenty of tractive power. Winding of the beater is prevented by large diameter and the beater teeth are long, strong and chisel pointed.

A thorough examination of the I H C spreader line, at the store of the local dealer who sells them, will interest you. Have him show you all these points and many more. Study the catalogues you can get from him, or, write the



International Harvester Company of America

(Incorporated)

Chicago

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I'll Feed Your Stock 60 Days Before You Pay

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W. J. BUTLER.

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(Signed) D. E. C. LONG & SONS.

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Tell me how many head of stock you have. I'll ship enough Sal-Vet to last 60 days. You simply pay the freight charge when it arrives, and when the 60 days are up report results. If it does not prove satisfactory I'll cancel the charge—you won't owe me a cent. Fill out and mail coupon today.

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40 lbs. \$3.25, 100 lbs. \$5.00, 250 lbs. \$9.00, 500 lbs. \$13.00, 600 lbs. \$15.00. No animal made in less than 100 lbs. packages. Trial offer. Never sold in bulk, only in "Trade-Marked" "Sal-Vet" packages. 60-day trial shipments are issued on 1 lb. of Sal-Vet for each sheep or hog, or 2 lbs. for each head of cattle or horse. If you can send without breaking regular size packages.

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Mules _____
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More Money For Cream

We need more cream to take
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for our

"DAISY BRAND" BUTTER.

Better start today and ship us
what you can spare.

"Checks Mailed for Each Shipment"

We pay one cent above Elgin Market for
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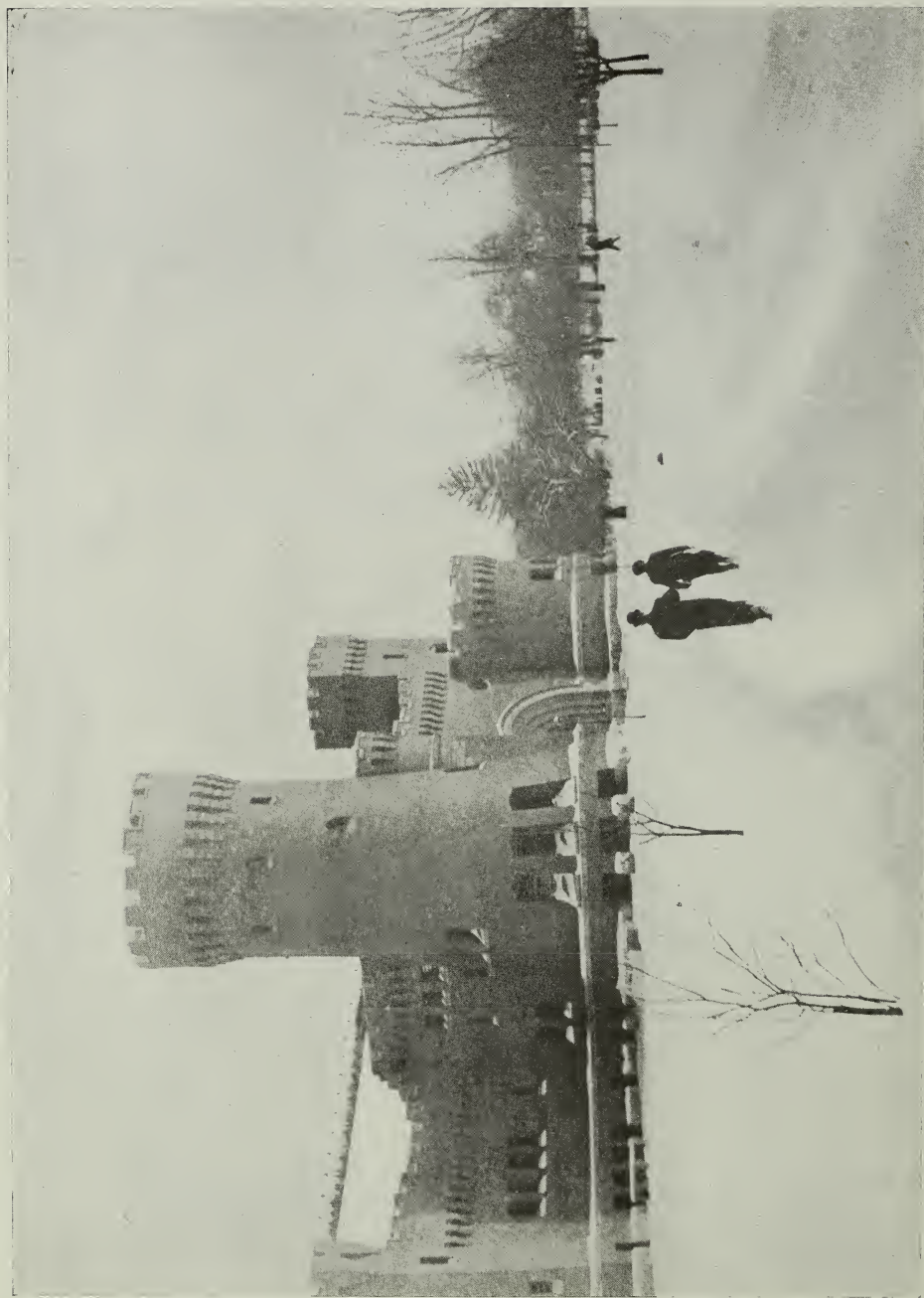
The Ohio Dairy Co.

COLUMBUS, OHIO



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THE ARMORY IN WINTER.

THE AGRICULTURAL STUDENT

Vol. XX.

OHIO STATE UNIVERSITY, COLUMBUS, DECEMBER, 1913

No. 4

Our Sugar Producing Lands

JOSEPH E. WING

THE lads who read The Agricultural Student are destined to scatter wide and far. Some of them no doubt will take up problems of management of southern lands, perhaps of tropical-lands. There is a distinct fascination in the tropics and the semi-tropics. To experience it one needs only to wander through a green house, to stand beneath palms and bananas, to feel the soft, moist breath of the place. There is life, pulsating, almost vehement life in the tropics, life both of plant and animal type, but the plants have distinctly the better of it. Plants are happier under conditions of heat and moisture saturated air than animals.

I write this for The Student from Louisiana. I am at Morgan City, which is not a city but a big village on the Atchafalaya bayou. This bayou is really a great river, an arm of the Mississippi. In times of high water a great deal of the Mississippi's floods, and all of the Red river come down the Atchafalaya bayou. Big steamers go up and down it and below is a great lake, then the Gulf. This is a famous place for oysters and the streets of Morgan City are all of oyster shells. Bananas tower above the small cottages, oranges—usually neglected—are in the door yards. Up along the bayous above the city are the plantations of sugar cane. The Teche, of famous memory, comes in near here and its shores are lined with forests of fine cane while immense sugar mills, some of them costing near a mill-

ion dollars each, are scattered along the shores.

There is here a fine, rich alluvial soil, lacking only nitrogen at times. The sugar planters grow two crops of cane, then they plant corn and cowpeas. The peas they plow under to restore the nitrogen balance, and again cane is planted. Some planters also use artificial fertilization for cane. They use nitrate of soda and cottonseed meal for the fertilizer. Cane is a plant of tremendous growth. Twenty tons are taken from an acre, maybe 30 tons. as much as 50 or more tons have been grown on an acre. Already you know that the whole plant is planted, the stalks lie under the furrows. They should sprout from each joint if the "seed" is good. Sugar cane in Louisiana does not make seed in its top, the season is too short, the heat not enough, but in all lands the whole stalk is planted. The advantage that other lands have is that the cane "ratoons" or sprouts again for a number of years before it needs replanting while here but two crops can be profitably taken before the land must be plowed, refreshed with a légume and replanted.

The cost of operating a sugar plantation is enormous. The laborers are like an army. The cane is cultivated intensely, no maize grower of Illinois or Ohio gives half as much or as good cultivation to his corn crop as cane must have. An army of amazons—

negresses—hoe the cane. Great care is taken to open water furrows for drainage for commonly these plantations are but a few feet above the tide water and tile drainage has not come, and because of the levelness and the torrential rains it may never come here. When the cane is ready to cut the magnitude of the task before the planter is appalling. He has 1,000 to 3,000 or more acres, a dense jungle of leafy cane stalks. Every leaf must be cut off by hand first of all. No successful machine for cutting and stripping cane has appeared. The cane is laid in piles

sugar in the cane because of hotter sun and longer ripening season and longer season for milling with never an overflow or a freeze.

What will our sugar planters do with sugar free at the custom houses? They do not know. Some, at least, will give up, they have played a losing game as it is. Some, most favorably situated, will keep on. Some may turn plantations to cattle ranches. There is talk of putting Zebu cattle in southern Louisiana. These curious Indian cattle are immune from ticks and nearly immune from all insects. They fatten on grass



NEGRESSES HARVESTING SUGAR CANE IN LOUISIANA.

on the ground. Women do much of the stripping. Muscular negroes, sugar fed, load it on the carts. Plantation railways bisect the fields. Great loading cranes swing the cane from carts to cars. Thus it goes to the mills and there it is ground, boiled and partly refined. It is a time of apprehension, of work at high tension. It takes a long time to put through the mill 3,000 acres of cane, say 75,000 tons, the product of one plantation that I am studying. If hard freezes come the cane is ruined and so may be the planter. Cuba has great advantages in two ways, more

and under the hottest sun. So it may be that instead of giving us sugar the land may give us meat. Louisiana is a glorious region, needing drainage and development. The climate is soft and beautiful, the mid-summer months excepted. The soil is the cream of all northern soils, deposited here by flood waters. It seems incredible that the land should revert to savage forest and swamp again. Surely some use will be found for it,—but there are sugar planters who are sure that they can not compete in sugar products with more favored lands like Cuba.

In Swiss Pastures

PROF. C. S. PLUMB

IN Switzerland one may find most interesting pastoral extremes. There is no part of this country free from rugged mountains, yet the pasture fields vary from those with a slant such as you would believe impossible, if you did not see them, to those of the comparatively low valley. The high-up hill farmer is usually poor, while in the rich river valleys, the farmer represents the highest grade of rural wealth. It is much the same here as in other hill

narrow valley among the Austrian Alps, where we saw farm after farm perched way up on the steep hillside, almost at the snow line. We marvelled at the location, and at the possibilities of such sky farming. Yet here the grass is favored with much moisture, and the pastures are thick and the grass nutritious. Only a few cows are usually seen in such places, often but one or two, and these furnish not only milk, but also labor.



A SWISS PASTORAL SCENE.

countries, and on the rougher, steeper lands but few animals are kept, while on the low fertile meadows, the herds are numerous.

The mountain pastures are not very large affairs, and they are usually very steep. One person over here informed me that the men on the high steep slopes, used climbers as he called them, on their feet, to enable them to hold on and not fall down hill, but a real Switzer assured me that this is not so excepting in very unusual instances. I shall never forget a day, when Mrs. Plumb and myself wandered down a

There are some charming grassy valleys in Switzerland, through which run water courses of no mean character. The river Rhine slips along through most of the Swiss border on the north, while the Rhone, famous in France for its beauty, takes its rise far back among Swiss glaciers to the south. Here the land extends in wide, rolling stretches. In central and eastern valleys, near Lucerne, Berne or Geneva, grass is the principal crop, and the dairy cow is conspicuous on the landscapes. And such fat pastures! You in America have never seen anything

quite like them. They are made up of a considerable mixture of grasses and weeds. The English rye or ray grass, orchard grass, the fescues and red clover, mixed with dandelion, wild carrot and various other weeds and grasses, make up the combination. Do not think the weeds predominate, or are as you see them at home. No, all one sees is the rich grass, with the familiar leaves of the weeds, minus the stem. The Swiss stockman cuts his grass to make hay two or three times during the season, and pastures it between times. And he assures me that he manures it twice each year. In these late October days, one sees on every hand the farmer scattering little piles of fine, rich stable manure over the pastures. He does it very systematically, in neat looking squares or strips, and after he is done, all one sees is a thick sward spotted with fine bits of manure that soon settle about the grass roots. Surely the grass fields must be well cared for, and be made to yield a plentiful harvest. From them the only hay used in much of Switzerland is derived, from them an astonishing amount of green grass for soiling is cut, and on them at one time or another the cattle are herded for their daily feed. Of course it is true that a field of hay, just before cutting, would not be pastured, yet this field following cutting furnishes much food. The European cures hay under conditions of moisture and cold that are very uncommon in America, and during these cool October days I have seen many farmers cutting and curing grass for hay.

Where farmers live in the valleys, they often drive their cattle up on to the mountain pastures in late April or early May, bringing them back to the

stables in the valley in late September or early October.

Now the cows are all located for the winter season, and are kept in the stables altogether, or are pastured for a few hours each day, under the care of some one, male or female, for they must be herded, as fences are very unusual in this country. The Swiss cows are usually ornamented with cow bells when on pasture. These are not the sort of cow bells common in America, with unmusical jangle, but are beautiful large brass bells, that send forth a musical note. These bells which commonly weigh four or five pounds, and are suspended about the neck by a heavy, wide strap, are removed while the cows are in the stable. I visited one section, where a peculiar, large hand made bell was common. I saw bells that had a diameter of at least 18 inches, and that must have weighed fully ten pounds or more, hanging to straps fully eight inches wide. Some of these were beautifully ornamented, showing much pride on the part of the owners.

Cows are about the only farm animals seen on the Swiss pastures. Horses are not common outside of cities, and many a farmer secures all his draft labor from the cows of his herd. Only the well-to-do farmers can afford horses and few own more than one. I had anticipated seeing sheep on the pastures, but have found scarcely none at all. In some of the live stock markets, three or four sheep of very inferior character were seen. I visited one farm where a small flock of dark faced mutton sheep was on pasture. The man in charge termed them Southdowns, but they more nearly resembled Shropshires of average merit. There are no woolen mills in Switzerland I am told, there-

fore the sale of wool would not be an inducement. Yet it seems to me as though sheep should do well on the steep hillsides. As the Swiss consume a great deal of mutton of foreign production, it would seem that sheep might furnish a good revenue from a meat producing point of view.

I cannot refrain from referring to the most excellent hogs I have seen over here. They are white in color, and are largely of Yorkshire blood, or the large eared white hog of Germany and France. I photographed one large handsome sow on pasture, the only case

large udders, a common sight, giving evidence of paying a good rent for the master. In fact the milch goat is an animal that is already extensively in use in Europe, as a medium for reducing the high cost of living. There are many families in America, who in all seriousness, might do much to reduce the bill for milk by keeping one or two milch goats.

The Swiss farmers are a gentle, quiet type of people, and as one moves about among a gathering of them, he is very sure to be pleasantly impressed with their quiet manner. The German



A FIRST PRIZE BROWN SWISS COW AND HER OWNER.

of an animal of the kind I saw on grass. At the Rütli Dairy School near Berne they had 300 hogs of Yorkshire type of different ages, on feed, and at the Agricultural College adjoining, the large piggery contained some splendid specimens of pure bred Yorkshires. Yet all these pigs were kept from green fields, and those being fattened were restricted to small cement-made stables, that were clean, but cool and damp.

The Swiss farmer is a frugal man, and he keeps his animals as profit makers. Buying little or no grain for cattle, makes profit nearly a certainty. Here and there one sees goats with

language is the common one, excepting in the Cantons adjoining France or Italy, and the rural people rarely understand English. It is not always wise to stroll up in an unexpected way to the farmers home, for large dogs are a feature of many farms, and then some dogs are not blessed with the best of dispositions.

The winter season is now approaching, and the higher mountain tops have long been capped with snow. Soon winter will be on, and then for a season the Swiss pastures will be deeply covered by the beautiful snow and hidden from sight.

The Country Church

REV. W. R. WALKER
Phillips Bible Institute

THE country church is the divinely appointed agency for rural regeneration. It is the only channel through which the life of Jesus flows into community life. Its mission is distinct and unique.

Its aim is the establishment of the Kingdom of God, which is that state of society in which the basis of all conduct is the teaching of Jesus relative to man's duty to God and his fellow-man.

This is the reason for organic existence, and necessitates its being indirectly concerned in everything influencing human conduct and life, since the Kingdom is not completely established till the will of God is done on earth as it is in heaven. At bottom all conduct has moral quality.

It is thus clear that in its mission the rural differs not from the urban church. Both exist primarily to bring men into right relations with God.

Several conditions unite in making this a critical day for the rural church. The city-ward tides of migration have swept much of the country population into the vortex of metropolitan life, leaving, in many instances, the less capable behind. The effect of this movement has been disastrous to church, school and every other rural organization.

The overchurched condition in many places threatens the existence of the church.

The invasion of some sections by foreign populations with old world ideas of liberty and religion challenges the rural church to heroic efforts in undertaking the difficult task of transforming and assimilating these people.

The growth of a landlord and tenant system in some of our most fertile and desirable districts menaces the church and all our rural traditions.

In other parts of our country, the depleted condition of the soil, resultant from unscientific methods of farming, makes it difficult to extract a bare subsistence from the ground, leaving little or no money for the educational and religious needs.

The rural church must not be disheartened, however. Its future is as bright as the promises of God if with faith, zeal and courage it applies itself to its task. Let it remember that it exists for what it can give to a community, not for what it can get out of it.

If the church has failed anywhere, it is because it has failed to be a servant of the community.

A few suggestions relative to the opportunities of the country church may be pertinent here.

First, I would that capable young men with a burning desire to make their lives count in the world, might pause to look into the fertile field of the rural ministry. The world today offers few opportunities for greater service. He can live in almost ideal conditions.

His table will be supplied with the freshest and best; his living expenses will be at the minimum; he can be a leader in every department of community life; he can train and inspire the leadership of the next generation; he can enjoy the closest and strongest fellowship earth knows; he can be a country prophet (and most of God's prophets have been such) giving the

people the vision that will prevent their perishing and help to a realization of their hopes. It is a greater honor to serve as a humble country preacher than to be an ambassador to a foreign court.

The second thing I would stress is that the rural church has the opportunity to transform rural life. It is also under the necessity of doing so, as no other factor will or can accomplish this result.

in the church should avail themselves of the advantages offered by it, inasmuch as its contribution to them will add to their efficiency as workers in the church. In turn, they will be provided an opportunity to pass along to the Grange whatever of good they have received from the church.

In addition to the Grange there are the schools, farmers' institutes, domestic science schools, literary clubs, Rural Y. M. C. A.'s, all of which render



“EVER MINDFUL OF THE FAITHFUL ANIMAL THAT CARRIES THEM TO THE HOUSE OF GOD.”

It will tho, I am glad to say, find many auxiliaries at hand ready to co-operate with it in its supreme task, and should therefore have a sympathetic interest in the work of other rural organizations.

The Grange, for illustration, is no rival of the rural church.

Its objects are wise and good, paralleling those of the church in only a very limited sense. Thru its ministrations to the intellectual social and economic welfare of the community, it indirectly serves the church. Leaders

a social service to the community, thru which the church can extend its influence and which will indirectly aid it in its mission of evangelism and training in the duties of citizenship in the Kingdom.

I may be pardoned for stressing the fact that the rural church is the best conservation of rural morality. The perpetuity of our nation and institutions have made us greatly dependent upon keeping the fountain of leadership pure. Eighty per cent of our leadership is country bred

It is the superior morality of the country that explains the fact.

There is no permanent intellectual or economic greatness divorced from righteousness. Every page of history proclaims this fact.

The right living which is indispensable in the production of truly great men is easier, more natural, in the country. No nation has long survived when the commercialism of the city became dominant.

The city has superior educational advantages, provides more luxuries of life, caters to social demands, remunerates labor more highly and excels the country in several other particulars. Yet despite the disadvantageous conditions of life, the country produces better and greater men than the city. There is but one satisfactory explanation of the situation that rural superiority is the direct and logical result of more moral living. The task of regenerating and training rural people in pure living is delegated to the rural church. It has not a monopoly of responsibility but it has a controlling interest.

The church has ever been a greater institution in the country than in the city. It is both a rallying and radiating center for the choice people of the community. The very occupation of people in rural districts tends to bring them into closer relationship with God. They have time to think, their livelihood depends upon their correct interpretation of His laws, they keep healthier in body and mind, and magnify the religious side of life. This has

resulted in keeping religion purer in the country.

The country church must be preserved for the future welfare of the nation. The abandonment of this sacred institution spells dissolution of the Republic.

In the hope that this may fall under the eye of a large number of young people whose home is in the country, let me append a word to such concerning relationship to the church back home.

You are fortunate in the school privileges now yours. You are being fitted to become the leaders in your respective communities.

Your attitude toward the church will determine that of many others.

If you demonstrate to your friends that your education has brought you into closer relationship with God, as all true learning does, and to an appreciation of your duty to your fellowman, your very presence will be a benediction. A great privilege is yours—that of serving the highest need of your community by giving yourself to it.

If you thus imitate your Lord who came “not to be ministered unto but to minister,” radii of wholesome and far-reaching influence will diverge from your life. No matter how humble or obscure your station, your sphere of influence will be coextensive with your worth. Be encouraged to link your life with this divine institution, knowing that great will be your reward both here and hereafter.

Old year's sorrow,
Cast off last night, will come again to-morrow—
Whereas, if thou prove gentle, I shall borrow
Sufficient strength of thee for New-Year's sorrow.
—Robert Browning.

An Ohio State Man with a Vision

PROF. ALFRED VIVIAN

OCCASIONALLY our civilization produces a man who has a great vision—a man also endowed with such courage that he is willing to devote the rest of his life to an attempt to make his great vision a still greater realization. Such a man is Mr. Sam Higginbottom. Born in Wales; reared in an atmosphere of successful agriculture; he came early to America where he received most of his education. Early in life he decided that he wanted

missionary schools, is largely of the old classical type, though modified by the peculiar requirements of the Indian system of education, where the degrees are not granted by any college but by a government examining board which prescribes the ground to be covered for each degree.

As a teacher of Economics, Mr. Higginbottom was naturally led to a study of the economical and sociological conditions in India and was immediately



ONE OF THE BUILDINGS AT THE CHRISTIAN COLLEGE, ALLAHABAD, INDIA.

to be a missionary, and when upon graduation from Princeton he was offered a position in India, who will say that the offer was not an answer to his prayers?

Mr. Higginbottom was sent to the Allahabad Christian College as a teacher of Economics in which capacity he served for a number of years. This is a missionary college under the American Presbyterian Board and is open alike to Christian and non-Christian students. The curriculum, as in all the

impressed by the fact that nearly ninety per cent of the 325 millions of people in India are directly dependent on agriculture for their livelihood. He found that under their conditions of farming the yield is very low (only 8 bushels of wheat per acre) and that the average income of the farming class does not amount to as much as five cents a day for each working member of the family.

Here was food for thought, and it did not take him long to conclude that

the missionary school ought to be doing something for the material welfare of these people at the same time that it was striving to uplift them spiritually. The schools in fact were providing a kind of education well suited to a relatively small portion of the population, but were offering nothing for that larger portion who spend their lives close to the soil.

So obsessed did he become with his vision that he asked for a two year furlough to return to America. He entered the College of Agriculture of The Ohio State University and two years later (in 1911) was graduated from the course in agriculture. He also obtained his M. A. from Princeton during this period. In the fall of 1911 he returned to Allahabad taking with him Mr. Bembower, a graduate of the same year from the course in horticulture.

I had the pleasure of spending a few weeks with them in January and February last and of delivering a number of addresses at that college and elsewhere under their auspices. Thanks to the co-operation of the government the college has been able to procure a farm of some size directly across the Jumna river, in sight of the main campus although about two miles distant. The farm is typical of those of the Ganges valley plain, although Mr. Higginbottom purposely chose a site on which the soil was rather below average in fertility.

The work, of course, was very young at the time of my visit, but the start which they had made was very gratifying. Mr. Higginbottom has concluded, rightly I think, that dairying should be developed, partly because the religion of a large majority of the natives prohibits the use of meat, and, also, because the dairy cow is the greatest

machine for converting roughage into a food suitable for human beings. He already has a small herd of cows and buffaloes which are above the average of the locality in milk production. It is impossible to find in India cows of desirable milk producing capacity and the upbuilding of a native dairy strain promises to be a long job. Mr. Higginbottom is anxious to try the effect of a Holstein cross on the native cows, and we are hoping that some one in this country will undertake to send a young Holstein bull as a gift to the college. The smaller dairy breeds are out of the question, for the native farmer must have a breed that will produce a working ox of good size. In reality, Mr. Higginbottom ought to be provided with several young bulls for he is bound to have heavy losses in imported cattle which are not immune to the diseases so prevalent in India. That the cross will pay from the dairy point of view is shown by one herd of half-blood Ayrshires which I saw in the military dairy at Umballa. Here a group of twenty heifers from an imported Ayrshire bull on native (Sana-whal) cows gave after their first calf an average of twenty-two pounds of milk a day, while the dams gave an average of only ten pounds. No one has ever tried to breed the buffalo for milk production so there is no telling what may be accomplished there. At the present time the average daily production of cows is ten to twelve pounds of milk, and of buffaloes twelve to fifteen pounds.

One of the first things the college is attacking is the method of plowing that is customary here, and experiments are now in progress on the college farm with deep and shallow plowing as well as plowing in different seasons of the year. The native plow is

nothing more than a pointed stick with the point steel-clad. It merely scratches the surface of the soil. In ordinary practice the seed is sown on the hard surface of the ground and the farmer, if he is diligent, goes over the ground in three directions with his crude plow. Mr. Higginbottom has calculated that such a man walks fifty-one miles in plowing an acre. He is introducing a small American plow (it is no use to talk large plows at this time) and finds that with it the farmer and the same yoke of oxen can plow the acre by walking only eight miles, and make a much better job of it at the same time.

All of the methods of the native farmer (**ryot** they call him) are as crude as his method of plowing and the fallacy that he has evolved a system of farming best suited to his land is absolutely disproven in the few places where good methods of culture have been tried. It will not be an easy task, however, to persuade the **ryot** to

take up the new methods. He has been taught by the priests to look with suspicion upon everything emanating from the white man; every operation on his farm has a religious significance to him and he consults the priests or holy men before he performs any of the ordinary tasks of his calling. I am satisfied that the only hope of touching him is through the Christian missionary. The government college of agriculture (so-called) have had no effect at all on the farming classes and they never will have as long as they are conducted along the present lines. The Indian **ryot** needs a better agriculture to lift him out of the heartrending poverty which is his present lot, and he needs a better religion to lift him out of the despair and fatalism of his present creed. There is no missionary effort of the present time which promises so much return for the money invested as this vision of Higginbottom's which offers to the Indian **ryot** his two greatest needs in one package.

There was never a leaf on bush or tree,
The bare boughs rattled shudderingly;
The river was numb and could not speak,
For the weaver Winter its shroud had spun;
A single crow on the tree-top bleak
From his shining feathers shed off the cold sun;
Again it was morning, but shrunk and cold,
As if her veins were sapless and old,
And she rose up decrepitly
For a last dim look at earth and sea.

—James R. Lowell.





The Change of Interests, a Christmas Story

TOM L. SMITH '14

HE walked slowly while other men hurried along as though their lives depended upon it. The whistle had just blown; out of the gates poured a mass of men, black of face, boisterous, old and young, their dinner buckets rattling; all with the same eager desire to get away from the day's toil and breathe the freeness of the cold December air. As he walked along he saw them separate this way and that, some darting up side streets, some into the swinging doors of saloons along the way, into the dingy looking little stores or on to the corner where the street cars passed.

Lost with his thoughts, Jack Wallace did not realize that he was going slowly. Only this afternoon had he been told of another promotion. And there were other thoughts that coursed through his brain; of another Christmas spent away from home; this time before the hot heat of the furnace that knew no Christmas holiday; and somewhere back in his memories loomed up a picture of the farm of his boyhood, and he smiled when he recalled the romance of other Christmas days, of turkeys and pumpkin pies and care-free people. Always would these things linger as dear memories; he was wondering right now if he had done right in leaving the home place after his father's death and in giving up the idea of farming just because a certain girl failed to become interested about living on a farm. Whatever sadness he felt was soon lost in the wild scramble for standing room on the street car.

He finally found himself wedged into a standing place near the rear door. Men on their way from work do not observe sadness, deep thought or si-

lence in a man: the deeper emotions are as unknown quantities to them. Neither was Jack noticing the men about him as the car bumped along. He was gazing out of the clouded window at the brightly lighted rows of houses, at the gay shop windows and the holiday crowds of shoppers. As the car rattled over a crossing someone tapped him on the shoulder.

"Why hello, Jim!" he said as he turned to shake hands with a tall young fellow who had just entered the car, "Where did you blow from?"

"Just on my way home for the holidays," was the reply. The speaker paused to let a group of men out of the door, and then continued, "How long have you been working here? We thought you were farming in the West."

"Well I'll admit that I have lived sort of a checkered career the last four years, just jumping from pillar to post and never seeing many people that I know, but I'm mighty glad to see you," replied Jack.

"We are going to have quite a Christmas up at Torfoot; Helen is at home now and all the rest of the crew will be there" Jim went on.

But Jack's face had fallen. "Christmas," he murmured, "no chance for me this year I guess; thirteen furnaces running full, and we will be short handed Saturday; it's tough to be a son of toil."

"Well don't tell me you that you can not get off for a couple of days and join us," said Jim.

Just then the car rolled into the square. Jim Collins had twenty-five minutes before train time and so they lingered there on the street corner,

talking over things that had happened since they had seen each other last. They had been boys together back at Profield and this was their first meeting in four years. Collins finally started for his train and Jack yelled after him, "Don't come to the station. If I go, I will get a horse at the livery stable."

After he had gone Jack stood there a long time, leaning against the iron lamp post. No man ever enjoys privileges until he has had the experience of having those privileges withheld from him. After seeing Jim no privilege seemed dearer than a Christmas in the country. What a poor Christmas it would be this year. Many a passerby laden with bundles shot a side long glance at him, as he stood there marooned by the post.

"A strange coincidence," mused Jack, "that I should run into Jim when I am in this frame of mind."

He was thinking of what Collins had told him. Could he stand it to see Helen Collins again after what had gone before? Would she still think of him as the "farm boomer?" Why had he ever tried to interest her in farming anyway? It would be a fine little vacation at least before he started on the long grind of his new job and he had half a notion to see for himself the many changes that had come to his community.

With a bound he was off, striding this way and that through the throngs on the streets. Into a telephone booth he plunged. It was the boss at the mill he called. His request must have been granted for his last words were, "Tell the boys that I will be back for the night turn Sunday!"

It was late Friday afternoon, the day before Christmas, when the train rolled up to the little station at Pro-

field. It was too cold for station stragglers and he saw few people whom he knew as he made his way up to the livery stable. There was the old familiar watering trough, now frozen hard; the sand bank and all the other landmarks to make him feel at home, but he hurried on to get his horse. As he drove out of the barn he yelled back to the old stableman, "I'll be back with the nag tomorrow night."

Out through the village street he drove slowly, in the early falling dusk. It interested him to know who was living in those rows of houses now, where smoke mounted high above the chimneys; what family circle gathered behind those drawn blinds. By and by the last house was left behind. The horse jogged along but before they had gone far it began to snow, at first just a flake here and there and then a steady fall. Everything was rounding towards a white Christmas. The man's heart was glad within him, glad at hearing the cracking branches of the tall trees, glad for the whistle of the vagrant wind, and of the ever hovering stealthy whiteness all about him.

Was not he a product of all this? This very road he had helped to build; helped with the harvest in yon neighboring field; breathed many years this country's air. Truly that bleat of lambs somewhere in the darkness was music to his ears. Yon flickering lantern moving dimly on the hill, those darkened barns and stacks of hay, all these brought sweet reminiscences on this Christmas eve. The roads and fields were almost one now, as the horse plodded on through the whiteness.

"We must be nearly there old boy," Jack announced to the horse as they rounded a bend and saw lights of Torfoot towering high above the surrounding fields and countryside.

A man met him at the gate and took his horse. Jack picked his way through the snow up to the low porch of the house. Almost before he had begun stamping the snow from his feet, the front door opened softly and a brown head peered out. It took no shrewdness to detect the welcome in her eyes as she said, "Welcome home old stranger Jack."

"A stranger in good hands," he replied.

The room he entered showed a charming picture. No light save that from the rough stone fire-place; the simple massive furniture; the dark piano gleaming from the fire light in the far corner, and the rows of bookcases. From the adjoining room came the smell of good home cooking and Jack did not wait long until supper was announced.

"This is surely some rise from boarding house to palace in one day," he laughed.

"Tell us about that boarding house and all these wonderful things you have been doing," said Helen and the small children shouted "Please do, Mr. Jack."

And Jack did tell them many adventures. Never reluctant to talk, he was now the center of interest for all of the family seated around the table. He seemed so changed from the boy who used to come over from George-dale farm, the young enthusiast on crops and soils and live-stock who argued that the farmers in Torfield valley were mere underdogs throttled by stock gamblers, fleeced by merchants, and in need of an awakening. His interest now was in his new work. He told them of his life these past four years, now in the east, now in the west, ever moving from one job to another; helping with the wheat harvest in the

west, scrubbing decks, sleeping in box cars, riding freights, until at last he had landed the job with the Universal Steel Company six months ago. Not boasting, but in a rather determined way, he described the rapid promotions he had enjoyed since that time and spoke of the new things ahead.

The night had worn on. It had been a lively Christmas eve for all. The two little children had hung up their stockings by the mantle; the old stories had seemed better than ever. Jack had been informed about nearly all of his old friends. He could have enjoyed nothing better than this. One by one the Collins family went to bed. Helen and Jack were left alone before the old stone fire place.

Stretching himself Jack stood up as if to retire, but instead wandered over to the table. Picking up a farm paper which lay there he paused to answer Helen's questions: No, he was not going to bed for a little while; forgotten about the farming game, no indeed—in fact he still took three farm papers and read all the **farm books** he could get a hold of; yes, it was a good hobby to have; the superintendent at the mill raved about his little "hobby" farm; he hoped to do the same some day.

As he leisurely turned the pages of the paper, she saw him start and fairly rivet his gaze upon the half turned page.

"Is this you?" he exclaimed, referring to the heading which confronted him, "**HORTICULTURE FOR GIRLS**, by Helen Collins."

"Just little distinguished me," drolled Helen.

Jack swallowed hard and lost his speech. Finally he came over to where she was sitting.

"Of all the surprises! When did you begin to write about farming? I

thought you intended to take up school settlement work." Jack's words came fast and jerky.

"I have even surprised myself somewhat," Helen replied, "but don't think that I am a writer; there is a bigger job on my hands. That is doing farm betterment work around here and it takes most of my time."

"And to think that I have been trying to interest you with tales of the city," was all that Jack could say.

"They have interested me greatly, but put another log on the fire and I will try to interest you. It is early yet and I will not bore you long." Helen smiled and after they were both comfortably seated, began her little romance with farming. Jack was not moving a muscle; he drank in every word while Helen rattled on; "I used to hate the thoughts of coming back here in the summer; everything became

dull to me, the shiftless people, the poor crops, the loss and waste of it all. It was during my last year of school that I had my awakening. I had thought always of taking up settlement work in the cities. I think now that the women have been back numbers in choosing occupations that are pleasant and profitable. At any rate I am supremely satisfied to help the boys run their business here and you just ought to see the competition in my girls' orchard club. But let us talk about that tomorrow; we must get busy and fill these stockings."

"Sure, I'll be Santa Claus but not till you tell me who can take that horse back to the livery stable tomorrow," said Jack.

"Then you are going to stay," she said eagerly.

"Forever at Georgedale," he replied.



THE CHRISTMAS STORY.

Co-operative Buying and Selling

ALVA H. BENTON
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CO-OPERATION means work together, and there is a crying need for it today among farmers in marketing their products and buying their supplies. Co-operation among farmers is not of recent origin, for we find the New England Association of Farmers organized co-operative stores in 1831. Co-operation received a serious set-back in the "seventies" because it was taken up largely with the idea of making money for the shareholders in the so-called co-operative enterprises. In spite of this, it today is of far greater importance than the average person realizes.

The latest authentic figures show that in 1907, there were at least 85,000 co-operative organizations with more than 3,000,000 members, or that one man in every six in the United States was a member of one or more of them. In 1911 there were more than 1,600 co-operative elevators in the North Central States, valued at \$15,000,000 to \$20,000,000, and marketing 250,000,000 bushels of grain. This is about 4,000,000 bushels more than all the cereals raised in Ohio in 1909, and 50,000,000 bushels more than all produced by the New England and North Atlantic States in the same year. We likewise find many co-operative live stock marketing associations often in conjunction with elevators.

The most widely known and successful firms are the fruit and truck growers' associations. On the Pacific Coast the California Fruit Growers' Exchange markets annually from 40,000 to 50,000 cars of citrus fruits valued at some \$20,000,000. In addition to this it buys in the neighborhood of 1800 cars of box

lumber, 120 cars of tissue wrapping paper, and 8 cars of nails for its members at a cost of \$2,500,000. In 1907 it netted its members \$3,000,000 more than if they had marketed through the private commission houses. In the same locality the California Fruit Exchange did a business of \$2,000,000 in deciduous fruits. The California Walnut Growers' Association in 1910 marketed \$2,000,000 worth of walnuts and one of the local associations made a profit of 16 per cent. on their sales of \$346,000.

The Grand Junction Fruit Growers' Association of Grand Junction, Colorado, marketed co-operatively in 1912, 1493 car lots of fruit valued at \$1,000,000 at a very low cost. In a similar way the Virginia Fruit Exchange of Charleston, W. Va., and the Virginia Fruit Growers' Association of Staunton, Virginia, each marketed more than \$100,000 worth of fruit in the previous year.

Perhaps next to the California Fruit Growers' Exchange, the Eastern Shore Produce Exchange, of Olney, Virginia, is best known. It handles most largely sweet and Irish potatoes, strawberries, cabbage, and onions, the shipments of which amounted to 10,000 cars in 1912 valued at \$3,500,000. The Mammouth Farmer's Exchange of Mammouth, New Jersey, handled vegetables and truck crops last year to the amount of nearly \$1,000,000. The South West Truck Growers' Association of San Antonio, Texas, was organized in 1905 for the purpose of marketing its members' onion crop on the co-operative plan since no profit could be made under the existing conditions of marketing. This last year the sales were 2,500 cars totaling almost \$500,000.

A few of the successful co-operative marketing associations have been mentioned with the amount of the business done in order to drive home the fact that there are large concerns doing a big business on a paying basis. While the character of the agriculture in many communities is not suitable for co-operative marketing at the present time, co-operative buying under direction of a county agricultural agent seems feasible. Mr. A. B. Ross the county agent in Bedford county, Pa., directs a sort of registration agency to which any farmer in the county may belong by paying a fee of 25 cents. When a farmer wishes to buy supplies as clover seed or fertilizer, he writes to Mr. Ross for prices and order blanks. After deciding on the grade and amounts which he needs, he fills out the blank and takes it to his local bank and deposits the money and the banker certifies to this effect on the order. The farmer then sends the order to Mr. Ross who forwards it to the wholesale firm who has previously quoted him prices. The county agent has secured samples and made germination tests on the seeds before ordering. The firm receiving the order ships directly to the farmer and the county agent need handle no money, however, the farmer is charged 25 cents for each order made to meet the expenses of registration. The firm draws a draft on the bank for the amount of goods shipped which is attached to the bill of lading and sent to the bank for payment.

While the successful co-operative concerns mentioned would lead one to believe that co-operation is a simple problem more attempts have ended in failure than have met with success. We must banish from our minds the idea that co-operation is a means of stifling competition. Successful co-operation must be a means of meeting com-

petition by practicing economics possible through the proper use. As worked out from long study and operation, the leaders are convinced that successful co-operation must embody the following principles. First, each member must have an equal voice in the management regardless of the stock value he holds. Second, dividends when paid should be based on the amount of business done and not on the stock held by members. Non-members who do business are sometimes allowed half the regular rate when dividends are paid. Third, the maximum rate of interest on stock should be fixed.

One obstacle to success is the lack of of the true get-to-gether spirit among farmers coupled with suspicion of their fellow farmer. This will be overcome only when the farmer realizes that he is not an independent and self-sufficing unit, and that he must put some confidence in his fellow worker. A closely allied and equally serious obstacle is the lack of business method and organization on the farm, as much of his suspicion and conservatism arises from his lack of training in modern business principles. Another principle which often contributes largely to failure, is the unwillingness of the farmers to pay large enough salaries to secure a capable and efficient manager for the co-operative enterprise. The best business brains are demanded and to secure them, the competition of private business must be met.

Many times the limiting factor has been lack of capital. Either capital was not available or the members did not realize the necessity of providing a surplus for operating the business. In some instances capital must be provided to make advances on growing crops as done by private firms. Again co-operative enterprises try to work

over too large a territory and factions result from lack of acquaintance and loyalty to leaders. A rock that has wrecked other associations has been the lack of sufficient business to meet the overhead expenses.

The advantages of co-operation are as great in making men and bettering social conditions in the country as in the actual pecuniary benefits secured, though the dollars and cents are the first things considered. Successful co-operation enables the producer to secure for himself more of the difference now existing between the producer's price and the cost of the consumer by eliminating some of the numerous middle men. Not that all middle men make too large a profit, but that there are too many of them in our system of distribution. The producer is enabled to ship in car load lots and a great saving is often secured in freight charges. The individual is also protected from the commission men who not uncommonly report inferior and damaged goods leaving the shipper without recourse in a distant locality, for the co-operative association can afford to employ agents and inspectors to look after the interests of its members.

In specialized crops as fruit, vegetables, and poultry products, the greatest gains come from better methods of

preparing and packing for market. The co-operative organization can enforce rules regarding growing and packing so that its members will secure special prices, and it can also study the demands of different markets.

There is no system today which is capable of doing more to raise the standard of citizenship than co-operation, and it brings to the farmer a realization of his power when working in union with others. It teaches him to trust his fellow farmer and that to get the laws which the farmer needs he must work for them shoulder to shoulder with his neighbor. To secure legislation favorable to their business, the farmers must co-operate. The easiest way to reach men's hearts is through the almighty dollar, and the farmer is no exception to the rule. When he awakens to the fact that he is receiving only 47 cents from every dollar the consumer pays for his produce, but that some are receiving at least 20 per cent more through co-operation there will be a powerful incentive to take part in such a movement. After working successfully the organization will promote and foster better schools, better roads, better farming, and all movements that lead to better laws, better citizenship, and purer politics.

This is the month, and this the happy morn,
Wherein the Son of Heaven's eternal King,
Of wedded maid and virgin mother born,
Our great redemption from above did bring,
For so the holy sages once did sing,
That He, our deadly forfeit should release,
And with His Father work us a perpetual peace.
—Milton.

Rural Evolution

LEO. L. RUMMELL '15

THE present day in agriculture stands in sharp contrast to the recent past not only in the country town but in each rural community, and in each rural home. From the crest of the Twentieth Century the student to-day beholds the life of his fathers in the distance in a light that somewhat dims and obscures his vision, he sees difficult yet constant steps to his position, and looking onward he sees in his prophetic eye that nothing can ever be again as in the olden times.

He sees from this summit people in homespun and once he knows their industrial activities, manner of life, and sociability. In that age flocks of sheep and cattle were kept in the pasture; flax was grown in the field; spinning wheels were buzzing in the home. The food and clothing were all produced on the farm. Travel was usually on horseback. Trade was scant; money little used. Each little family lived independently in the woods; each farmed in a crude manner a few partly cleared acres. Yet withal they were united in domestic co-operation and affection. Their thrift and sturdy traits were linked to intelligence and soon established schools and churches—the culmination of their earnest desires.

But, by the middle of the Nineteenth Century the cumbersome machinery was replaced by new instruments of textile manufacture. These wonderful machines worked as if they were tireless, inanimate objects endowed with the talents of their inventors. This former age was characterized by hand tools for nearly all farming operations. During the first half of the following century the hoe, scythe, sickle, and flail were displaced. Up to this time

there had been no demand for improvement. Now necessity gave rise to invention and improvement, and henceforth there began a development in livestock and machinery which was to place agriculture among our leading sciences. Hand labor was replaced by machine power; physical effort by thought. From these simple tools there developed implements whose quality seems near the perfect. First came the plow. Then the reaper followed in the early thirties; then threshing machines, improved wagon, binder and a thousand and one other implements that have lessened the farmer's cares and increased his profits and enjoyments.

This transition from the age of homespun to the age of machinery, and the adjustment to new conditions constitutes rural evolution as it manifests itself today. A fact of critical importance in the transition is the altered density of population, a fact which has made it necessary "to make two blades grow where one grew before." Farms are cultivated more thoroughly, more intensely, and with more scientific methods, so they have made possible this vast production for the market.

The hours of labor have been shortened; the strain of toil has been reduced—in short the standard of living has been raised. Probably most of this progress can be attributed to the machine. The farmer of today has higher ideals—a higher and better goal to look towards.

This industrial evolution has put a new pressure upon rural life that is more important than the attraction of cities. This pressure has increased the struggle for existence and, as it was

fittingly said, "the mill of evolution has crushed out the weaker strata of the population." Among those who are gone are the laborers, dependents, and owners of the poorest farms. The rural community is an excellent field for operation for crushing out the unfit in the fierce struggle for existence. To Darwin is given the merit of discerning this simple principle of evolution. Along with the theory go variations due to environment. The net result is that the equality and homogeneity of the rural population is nearer realization. Each works more for and with his fellows, not against them. And there is no select circle in their society. The condition of the people has also been ameliorated by

many factors and elements of society and by the development of agricultural education. These have worked a profound change and are destined to have a greater influence in the future.

Now, we have scanned in a brief way the mighty uplift of the rural population. We began with the study of food and clothing and lingered over personal characteristics. We saw a line of ascent to a higher plane of civilization, to higher ideals, and to a better type of manhood. This is no Utopia in far off seas but it is a human development taking shape before our eyes—a greater and better rural population wrought out of the vicissitudes of men in the painful process of evolution.

Blight and Its Eradication

LLOYD P. FOSTER '15

A WORD of warning should be sounded to all Ohio orchardists and to eastern orchardists generally, to check the now increasing invasion of blight among apple and pear trees. Blight is especially severe in vigorous growing trees of both apple and pear, and hence the recent change in the methods of orchard culture in the east has resulted in an increase of blight, as well as of thrifty trees. The orchardist then who has his trees in sod need have little fear of blight, however, at the same time he cannot expect to keep pace with orchard development and must be a back number.

In spite of the statement of well known plant pathologists there are well read orchardists all over the country who doubt the existence of such a thing as blight. Some are convinced of its occurrence only among pears, claiming that the seeming occurrence

among apples was due to other causes. The plant pathologist, however, has by methods of inoculation, found that it is all one blight, and that the same organism which attacks the apple and pear also attacks the quince, hawthorn, crabapple, service berry, mountain ash, and a few other wild fruits. The fact that it is one disease can be proved by anyone transferring it with the point of a knife from one vigorous growing and infected tree to an uninfected tree.

Blight infection has been found to come from a germ called pear blight bacillus. Its effect on the tree is very much the same as the effect of blood poisoning on a person. The germs, or bacilli, enter thorough injuries on the bark, or through blossoms in the spring, and poison the sap, which then spreads the disease down the twig or limb, under the cambium layer, seldom stopping in the case of pears, but sometimes stopping with the last year's

growth in the case of apples. If the point of a knife is now stuck into the bark, a red, juicy, substance, the poisoned sap, comes out in small globules. It is this substance which contains the deadly blight bacillus. The bacilli in this form may be carried by insects, particularly by bees and aphids, and thus infect other trees. The bees in particular infect the blossoms, while the aphids infect water sprouts and tender terminal growth of the same tree. Aphids are particularly bad in spreading the disease among young trees. As has been said the disease is not as a rule so bad among apples as among pears, but nevertheless a vigorous growing apple tree, in a soil containing plenty of organic matter and moisture, will oftentimes, be as badly affected as a pear tree particularly in the case of the Russian varieties which seem to be especially susceptible. Among these are the Alexander, Yellow Transparent, and the Red Astrachan. Among the pears there are few varieties which are not susceptible to the disease, namely; Winter Nelis, Le Conte, and the Kieffer.

The blight organism lives over the winter on limbs of the preceding summer's infection of pear and apple and also on seedlings, crab apples, and hawthorns, to which as a rule little attention is paid. In order then to prevent the infection of new growth and of blossoms in the spring, all signs of blight should be pruned out in the winter, or in very early spring at the latest. In cutting out blight during the winter the cuts should be made at least eight inches below the infection in all branches, and at least one inch to either side in large limbs which are affected only in small spots. These cuts should then be thoroughly disinfected by painting with corrosive sublimate.

It is also wise policy to keep the pruning tools disinfected particularly before going to another tree. Corrosive sublimate is made by dissolving a tablet of bi-chloride of mercury in a pint of water.

With the approach of spring and the increased flowing of the sap, new infections must be watched for, and cut out as soon as they appear. The limbs must now be removed at least twelve inches below the visible infection, for the disease spreads rapidly at this time, and its full advance cannot be seen. The work must not stop here but must be kept up throughout the entire summer, particularly with pears for it is from these trees for the most part, that the apple trees are infected. In all cases wounds and tools must be kept thoroughly disinfected. Thus with the proper attention the spread of blight can be kept well in hand, and with the exception of the spring period, a few hours once a week will be sufficient time to protect even a fair-sized orchard.

There is no reason why the growing of pears in the southern sections of the country should be abandoned on account of blight. The writer knows of sections in the west where pear growing is highly profitable and yet where only a reasonable amount of care is taken in preventing blight in the neighboring orchards. Pears are too luscious a fruit to think that they can only be grown in the extreme north and west. But the even greater danger of blight is that to the apple industry, for with the changes in methods of culture certain varieties in particular, are bound to become more and more infected each succeeding year, which means not so much the loss of trees, or even large limbs, as of terminal growth and fruit buds.

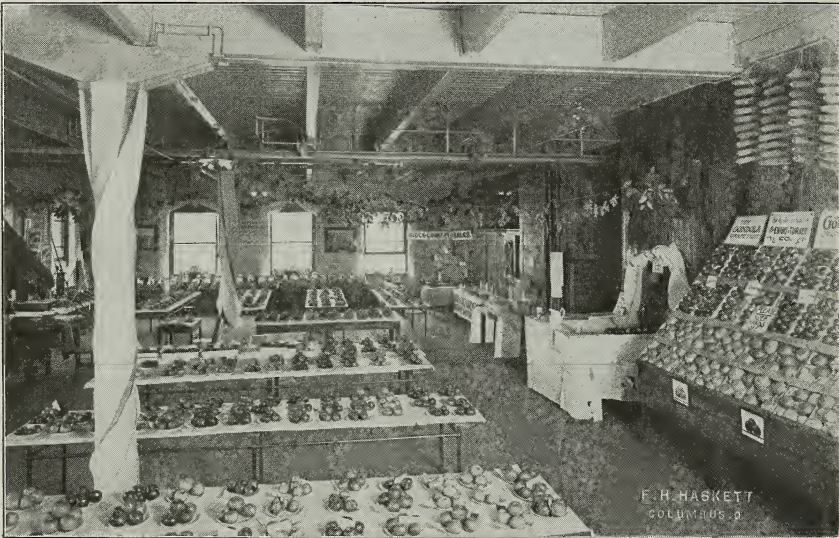
The Apple Show

LLOYD P. FOSTER, '15

ON December 4th and 5th was held in Townshend Hall the Third Annual Apple Show under the auspices of the Ohio State University Horticultural Society. This show was not a money-making proposition, but was purely educational, being of value in teaching people to distinguish between the different varieties of apples and their uses. No admission fees were charged, and the show was open to the public as a whole.

growers' exhibits C. L. Burkholder had the best showing of plate varieties, and H. W. Colville won first prize in the tray exhibits. The exhibits were judged by J. B. Kiel, orchardist at the State Experiment Station, and a former Ohio State student. Mr. Kiel also gave a very interesting talk on "The Behavior of the Different Varieties of Apples Under Storage Conditions."

An interesting feature of the show was the Experiment Station plate dis-



A PANORAMA OF THE APPLE SHOW.

Two general exhibits were made, those of students, and those of growers; and classes were made for single plates of varieties, single trays, three trays, groups of plates, and the greatest number of varieties. Forty-six varieties were shown by students, and a total of sixty-eight varieties were displayed. Among the premium winners I. P. Lewis won the sweepstakes as the best variety exhibitor, and W. W. Ellenwood won the sweepstakes for exhibiting the greatest number of varieties. In the

play of the forty leading varieties of Ohio, which was arranged by Mr. Kiel. Attached to each plate was a tag containing the characteristic qualities of the particular variety. These tags are now on file in the offices of the Horticultural Department and may be examined by anyone interested. A number of packing demonstrations were given by Mr. Herman Worthwine, during which he explained the different methods of packing, the essential points necessary for a well packed box, and the

value of packing apples in boxes. The Home Economics department of the University gave a continuous demonstration in the uses of the apple for cooking purposes which attracted as much interest as any feature of the show, and was of interest to the men as well as the ladies.

The Dairy Department of the University also had a display showing the comparative compositions of milk, cream, butter, and cheese.

A number of Columbus firms had booths at the show. The Livingston Seed Company displayed all the latest appliances and improvements in the line of spray pumps, hose, nozzles, connections, etc., and also a line of pruning tools. The Evans-Turner Company displayed western box apples and Florida grape fruit. The Sefton Manufacturing Company showed a line of boxes and cartons used by the farmer and fruit-grower in supplying trade by parcel post. The Block-Crane Floral Company had a very attractive floral and plant display. Kesler-Dietz and Company, landscape gardeners, demonstrated the art of tree surgery with lectures, and showed some examples of good and bad pruning with the effects of same. The Fruit Growers' Market Company, an organization composed of a number of Ohio growers, had a display of seventeen varieties of apples in baskets and trays. This company sells only their own Ohio grown fruit, and aim as far as possible to eliminate the middleman by selling direct to the consumer from their own store. Professor V. H. Davis,

of the Department of Horticulture, is the president of the company. The Columbus Bread Company also had a display of their products and served free sandwiches throughout the show. The Gassar Coffee Company served free coffee.

The Students' Apple Judging Contest was held the first day. In all thirty plates, representing ten varieties, were named and placed, and the first plate scored. The name of the winner of the contest each year is placed on a silver loving cup belonging to the Horticultural Society. In the contest this year, V. L. Cooper won first place. W. I. McCann, C. L. Burkholder, and L. P. Foster scored second, third, and fourth, respectively. All these men scored extremely close and made an excellent showing.

The show ended with an auction of all apples entered for prizes, no entrance fees having been charged. The proceeds of this sale go to pay the expenses of the show. In spite of what is generally considered a poor apple season in Ohio the exhibits this year were much better than those of last year. There were almost twice the entries, and the attendance and interest manifested was very much better. The attendance at one time was as high as four hundred, and probably close to a total of twenty-five hundred students and visitors availed themselves of the opportunity of seeing the show. Much of the credit for the success of the show was due to President H. C. Kelley.

Some Glimpses of the Show

ARCHIE J. BISHOP

THE 1913 International was the greatest ever. The capacity of the large arena was taxed to the limit with wonderful specimens that represented the cream of the fat stock world. The night shows illustrated what is possible to accomplish through the careful breeding, feeding, training and grooming of the various classes of animals. It showed the aristocracy of animaldom. The million dollar parade of horses and cattle was elaborate. Brilliant competitive shows of saddlers and light and heavy horses hitched to appropriate vehicles made the show very interesting. The dashing polo contests and sheep dog trials were highly entertaining. Such an equine display furnished a sight unsurpassed for beauty in the eyes of the admirers of fine stock.

The Judging Contest.

Great praise is due our Ohio State judging team for their excellent work in the very strenuous International contest. The competition was keen and the scores of the winning teams very close. They ranked as follows:

Score.

1. Texas University 3654
2. Missouri University..... 3495
3. Purdue University..... 3494
4. Ohio State 3470
5. Iowa State College..... 3460

W. E. Reed, of Texas, was the highest man in the contest, with a score of 819.

Maurice Helser, of Ohio State, was the fifth highest man of the contest,

scoring 743 points, and took highest honors on sheep.

The Show Ring Results.

Ohio State furnished plenty of competition and won a goodly number of ribbons on the stock entered. The winnings follow:

FAT SHEEP:

- Dorset wethers, second and third.
- Cheviot wethers, second and third.
- Cross-bred wether, third.
- Pen of five wethers, second.
- Clay Robinson Special, third.

FAT CATTLE:

- Shorthorn yearling steer, third.
- Shorthorn special, third.
- Angus steer, 2 years old, tenth.
- Carcass class, by an Angus steer, second.
- Red Poll steer, fourth.

FAT HOGS:

- Berkshire barrow over 12 and under 18 months, third.
- Pen of Berkshire barrows, third.
- Association special, third.
- On the six Yorkshires entered Ohio State won everything in class.

The Banquet.

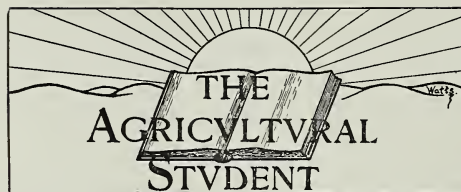
On Monday evening, December 1st, a banquet was held in the Exchange Restaurant, Chicago, for the Confederation of Agricultural Colleges in the United States. Over 100 students and college men participated and toasts were given by leading agricultural men. Missouri had charge of the banquet this year and handled the task in an admirable fashion.

The secret of education lies in respecting the pupil.

—Emerson.



Holly branch and holly berry
Bring to me a message merry;
Bring remembrance and a rhyme,
Of the merry Christmas time.



OF

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COLUMBUS, OHIO, DECEMBER, 1913.

Editorial

How sweet that name sounds to the average individual! Christmas means much to most people.

CHRISTMAS. To whom should it mean more than to the country people—the farmers? Was it not to the farmers that the angels announced the coming of the Christ, on those Judean hills 2000 years ago? Many a mother looks forward to the home coming at Christmas time. It is then that she expects to have her boys and girls gathered around the old fire place to live over their youthful days once more. To visit with the home folks at Christmas gladdens the heart of old and young alike. It revives within that better spirit that may have been slumbering for a while. Wherever you are do not fail to go home this Christmas. Take some time from this busy life just to live over your childhood days again. Go home, sit around the open fire place

tell stories, crack nuts and visit with the home folks. It will brighten the lives of the old folks, it will renew your youth and then to you will the words of the angels be true when they sang, "Peace on earth, good will to men."

No organization could long exist if it were not for the loyal and faithful men back of it. The

THANK YOU. Student management takes this opportunity of thanking its numerous friends, supporters and advertisers for their untiring efforts in behalf of The Student. The various staff members, the faculty and others about school are constantly doing much that is for the production of a better Student. Our contributors take time to prepare special articles for our columns for which we can only pay them with thanks and good wishes.

To our subscribers, our contributors, our advertisers, our friends, to all interested in The Agricultural Student and in Ohio State we publicly extend our thanks for their past support. To repay their many helpful acts in making The Student a success we wish them many a Merry Christmas and a Happy New Year.

There are many big problems before the American farmer, but none of any

CO-OPERATION FOR THE FARMERS.

greater magnitude than that of co-operation. The farmer has always been more or less independent. The first pioneers were scattered over a wide tract of country. They were unable to co-operate and help one another, but each had to depend upon his own initiative. The spirit of independence has come down to the present day. There is no other class that has as much trouble working together and for each other as the farmers. There is too much suspicion and jealousy in the heart of the average tiller of the soil. If the farmers as a class ever expect to co-operate and help one another and at the same time work for their own good they must be willing to give up some so-called personal liberties and petty differences. Every other business has co-operation and the farmers must also learn to work together.

There are many ways in which the farmers can be mutually helpful but in no way more than in the buying of supplies and in the marketing of their produce. Portage County has demonstrated during the past summer how well the farmers can co-operate in the purchase of their own fertilizers. The county adviser is aiding materially in bringing the farmers together. It is

not a question any more of likes and dislikes but it is a question of dollars and cents, of bread and butter, of success or failure in farming. Let our students of rural problems make a careful study of this gigantic problem; let our farmers be willing to help one another and to work for the good of the whole community, for by so doing they will set in motion a boomerang that will react to their own good.

During the past few years there has been much duplication of investigational and in-

CO-OPERATION IN THE AGRICULTURAL WORLD.

structional work along agricultural lines. Every department of our state and national government tried to gain the good will of the farmer. Every railroad, city and board of trade spread agricultural propaganda broadcast. The time is now rapidly approaching when much of this useless expenditure of time and money will cease. There are enough problems to be solved for each department to co-operate and work in harmony. Ohio is one of the leaders in this work. The Agricultural Commission is systemizing and harmonizing the work of the various agencies in the state. Secretary Houston of the department of agriculture at Washington says that this is one of the big problems of the agricultural world at the present time. At last we have a man who is able to grasp the larger problems of agriculture and work for the best good of all the people. The work of the agricultural department needs to be harmonized with that in every state, the colleges should co-operate with the experiment station in their own state, and the different states need to co-operate more than any do at the present time. We hear much

about the efficiency expert. If such a one is needed anywhere he is needed in the agricultural world to harmonize and systemize the work along all lines of investigational and instructional work.

That's what the Short Course and Farmers' Week are. A real agricultural education boiled **THE FARMERS' down and given in** one dose. There never **COURSE.** were so many good things planned to be given in such a short time as there is this year for the Farmers' Week or for the Short Course. Just look at the list of speakers and notice the variety of subjects in store for the farmers of the state, their wives and children. Every one interested—or if he is not interested he should at once become so—should get some of his friends to attend these courses. Get them to stay for the longer work if possible. Those that can't stay eight weeks can come for the five day work. They will be repaid many times over for their time and money. It is during these courses that the college gets close to the farmers of the state. Then it is that the college is tested. If the results are good, if the college stands the test, the people of the state will be benefited many fold and they in turn will help others and the good will come back in increased aid for the college. Persuade some one to come

here for the short course. Aid the work in every way possible. This is one of the very best ways of advertising the college. Boost the work and get the largest crowd out in the history of any Winter Course or Special Farmers' Course.

"Be a missionary and preach the gospel of better agriculture" is the timely suggestion

THE STUDENT'S of our friend and **DUTY.** professor, Alfred

Vivian, in a recent lecture to his class in Soil Fertility. No matter where you live, what conditions may surround, you will at some time have an opportunity to enlighten some one or teach some lesson which could be for the betterment of agricultural conditions. As a student of an agricultural college you will be recognized as an authority on subjects relating to agricultural affairs and it is your duty to "come over" if possible. Be a live wire in your local grange, encourage the teaching of agricultural in your home school, tell what "OHIO STATE" can do for the boys and girls of your community and make "OHIO STATE" the goal of their ambitions. Farmers as a rule are not slow to action but need a leader to carry out their plans and to offer suggestions. In such cases never hide your light under a bushel.

C. M. B.





SPECIALS



Farmer's Week, Biggest Event of Year at Ohio State University

FARMERS of Ohio, their wives and children will be afforded one of the best opportunities ever presented for a week's instruction in Farmers' Week which will be held at Ohio State University, February 2 to 6. Held annually for the benefit of the farmers and their families who cannot take advantage of college instruction for a longer period of time, Farmers' Week has this year reached proportions larger than ever known before. The lectures and demonstrations will be given by many of Ohio's leading authorities and several noted agriculturalists from other states. Following is a list of the speakers for the week:

Alfred Vivian.
H. C. Price.
A. G. McCall.
H. C. Ramsower.
W. R. Lazenby.
Oscar Erf.
Wendell Paddock.
V. H. Davis.
A. B. Graham.
Dr. W. O. Thompson.
C. E. Thorne.

D. J. Kays.
William Hislop.
C. G. Williams.
L. P. Bailey.
F. S. Jacoby.
Cyril G. Hopkins, Illinois.
Fred H. Rankin, Illinois.
G. I. Christie, Indiana.
H. W. Waters, Kansas.
Martha Van Rensselaar, New York.

In addition to the above list of speakers several other state officials will deliver addresses; K. H. Talbot, concrete expert of Chicago, will be present to give demonstrations in his line of work.

During Farmers' Week some of the most important winter agricultural conventions will be in session at the University. The following meetings will be held at that time:

Ohio State Dairymen's Association.
Ohio Plant Breeders.
Ohio State Live Stock Association.
Annual Student Corn Show.

A new feature added this year for the first time will be the home-coming of former agricultural students and faculty.

1914 University Grain Show.

The third annual "Battle of the Kernels" will be held in Townshend Hall, January 28th and 29th. Many new features have been added to the show this year, such as a demonstration in finding the moisture content of market grains, and germination tests with different types of seed testers.

Some new classes have also been added. There will be a separate class each

for soy beans, red clover, and timothy seed—all Ohio grown. These are especially to be commended.

This event is now so well established that it takes a rank among the best grain exhibits of the country. Premium lists may be obtained from the Grain Show Committee, Townshend Hall. The public is cordially welcomed to attend. Admission is free.

County Agricultural Work

C. G. WILLIAMS

Member Agricultural Commission

IN April 1910 the Ohio legislature passed the original act providing for the establishment of county experiment farms. Under this act such experiment farms were established in Paulding, Miami and Clermont Counties in 1911, and in Hamilton County in 1912. This work is accordingly comparatively new but the results thus far achieved seem to indicate great possibilities for the county experiment farm.

In January 1913 the first County Agricultural Agent or Counsellor was appointed. Up to the present writing three such counsellors have been appointed; in Portage, Geauga and Butler Counties.

Both of these lines of work are at present carried on through the Experiment Station. In assuming the duties of the old Board of Control of the Experiment Station, the Agricultural Commission of Ohio which was appointed in August, 1913, found itself charged with the duty of co-ordinating existing agricultural activities. In the course of events the county agricultural work was brought to its attention first as a result of calls for the appointment of county counsellors. One county which had a county experiment farm was considering the matter of a county counsellor. After a careful consideration of the matter it seemed to the Agricultural Commission that the logical thing to do was to combine these two lines of county work, making the superintendent of the county experiment farm the county counsellor or agent and granting the latter official to such counties only as should vote to establish a county experiment farm under the act of April, 1910, as amend-

ed in April, 1913. Such action has been taken by the Commission.

The Agricultural Commission believes that this provision will result in a more efficient county counsellor. With carefully conducted local experiments back of him the advice of the counsellor will be worth more, as well as carry more weight. The work of the counsellor will also be put upon a much more permanent basis. At the present time a large share of the expense for the maintenance of the counsellor's work is provided by popular subscription. Everyone knows how uncertain this is. Under the plan proposed by the Commission the support of this work will be placed upon the tax duplicate. Instead of a few contributing funds and continually dropping out, the entire county will contribute a mere pittance for its support. The county will furnish, equip and maintain the farm, while the state will call for a high-class man. The county experiment farm will become the rallying point for all agricultural, horticultural and livestock meetings of the county. It may well be headquarters for the Pomona Grange.

It is of interest to note the line of agricultural activities now being carried on at the county farms already established, as follows:

1. The comparative value of different crop rotations.
2. The use of manure, fertilizers, lime and catch crops.
3. The varieties of farm crops best suited to the county.
4. The introduction of good seed of the best varieties.

5. The introduction of promising new crops.

6. Feeding and care of farm animals.

7. Planting and care of the orchard.

8. Pruning, fertilizing and spraying the orchard.

9. Control of plant diseases, insects and weeds.

10. Methods of farm management applicable to the county.

What county will not be benefitted

by having such lines of work carried on in its midst, superintended by a competent man who will spend half his time out over the county rendering such aid as he may be able, including the organization of farmers for co-operative work of all kinds?

If the matter of a county farm and agricultural counsellor be put before all the citizens of a county in its proper light, is it conceivable that it will not be passed upon favorably?



In a drear nighted-December,
 Too happy, happy brook,
 Thy bubblings ne'er remember
 Apollo's Summer look;
 But with a sweet forgetting
 They stay their crystal fretting,
 Never, never petting,
 Above the frozen time.

—Keats.

WITH THE BREEDER

NOTES OF INTEREST AMONG THE FLOCKS AND HERDS

Within the boundaries of our state can be found many herds that have found favor with the judges through their superior individuality. Among these show herds the following are brought to our notice mainly by their showing this year.

The Buckeye state offers a broad study among the Shorthorns. N. W. Wagner of Fremont, has the grand champion aged animals this year in Dalis Viscount and Mary Abbotsburn 9th. No less important are Carpenter and Ross of Mansfield, who have a large herd of exceptional animals, especially young stock. On these they won numerous prizes. They have 42 entries at the International this year. Maxwalton Renown promises to be a bull of a superior type.

There are not many Herefords in Ohio, yet at the farm of J. B. Fernow can be seen prize winning "white faces." Spring Lea Stock farm had the grand champion aged bull at Ohio State Fair this year.

Few men have done so much in the state in breeding up the Aberdeen-Angus as O. E. Bradfute, of Xenia. His herds both young and old are content only with the blue ribbons. Eastern Star of Meadow Brook is at the head of his herd.

Ohio is not fortunate in putting in the show ring many Jerseys this year. C. C. Folck showed young stock that met with favor. Good Hold Farm was well known as a producer of winners.

Sheffield farm has taken prizes at numerous state fairs but did not show this year.

The foremost Guernsey herd this season is at Keewaydin farm, Gates Mills. Governor of Keewaydin was grand champion at Ohio State Fair and also took a ribbon at the National Dairy Show. The herd took fourth place at this show.

Derrer Bros. took most of the prizes for the state this year on their Holsteins. At the state fair they showed the senior and junior champion bulls and the best young and aged herds.

Reuben is the first prize winner of the state among the Brown Swiss. He is owned by Hull Bros. of Painesville. They also put in the ring the best herds, produce of cow and get of sire at the state fair.

R. & W. Postle, at Camp Chase, exhibited the first prize breeder's flock of Cheviots this year. They also had the champion ram and ewe. They showed same choice individuals at the International.

Some very good Southdowns come from the flocks of C. L. Mitchell. He had the champion ram and yearling and the first prize exhibitor's herd at Ohio State Fair this year. Hampshires of his are attractive wherever shown.

Breeders of high class Poland China hogs admire the specimens of this breed at the farm of Shepard and Osburn of Columbus. Their stock combines breeding with correct type.

W. H. Robbins of Springfield, has a large herd of Duroc Jerseys that are hard to surpass. He has ten entered for the International.

Percherons and Belgians are always to be found at Bell Bros., of Wooster. They won the championship this year both in Ohio and Michigan on their stallions and mares of both breeds. They have 26 animals at the International.

G. A. Dix, of Delaware, is also a Percheron breeder. His yearling, Lady Carnot, was an outstanding winner and took first in the futurity contest.

Montgomery Boy owned by the White Star Stock Farm at Delaware, is always a contender for the blue ribbon. A number of other three- and five-gaited horses can be seen at this farm.

W. F. Palmer and Son, of Pataskala, have a flock of exceptional Shropshires and they have been consistent winners in the show ring this season.

It is now practically arranged that View herds composed of typical animals of all the breeds will be maintained in the Livestock Department of the Panama-Pacific Exposition during the entire period from February 20th to December 4th. These herds will include horses, cattle, swine, sheep, poultry and pet stock. This is thought to be a better plan than any sort of contest among the breeds because it will be far reaching in its educational value. California Jersey breeders hope to start a contest in futurities for their breed. This has excited interest among Jersey men in other states as well. An endurance test will be conducted to deter-

mine which sort of horse is best suited for army service. Any farmer can enter this competition whether he has pure-breds or not. The Livestock Department will handle all feed for the animals during the entire period.

It is believed that the poultry exhibit will be the largest of its kind ever shown. Also the display of pigeons at San Francisco in 1915 will surpass anything given before.

This will be the largest harness meeting ever held and no doubt all the big farms will be represented. Entries in the \$20,000 purses are scattered over the United States and Canada, and one has been made from Austria.

Ayrshire breeders are gratified to see that the average of their breed is being raised each year. Now the average of all classes in the Advanced Registry is almost 1,000 lbs. In the last folder of the Association are given two champions, one in the four year old and one in the two year old class. The first is Agnes Wallace of Maple Grove, owned by M. G. Welch & Son. She produced 17,657 lbs. of milk and 821.45 lbs. butter fat with an average of 4.56%. The other is Beuchan Joan owned by John Sherwin. His record is 12,773 lbs. milk and 532.07 lbs. butter fat as a two year old.

Canadian cattle at the National Dairy Show had to be subjected to tuberculin test before admission to this country. The owner also had to file affidavit that the certificate of tuberculin test refers to the cattle in question. Cattle not sold had to be returned immediately after the show.

CURRENT AGRICULTURAL LITERATURE

COMMENTS AND CRITICISMS ON CONTEMPORARY CONTRIBUTIONS

"First Principles of Feeding Farm Animals," by Prof C. W. Burkett. Prof. Burkett has been for many years engaged as an instructor in Agriculture and as an Experiment Station Director, and above all has had considerable practical experience in feeding stock. He is, therefore, thoroughly familiar with the subject and has presented it in such a way that it is both interesting and easily understood. His aim has been to interpret the findings of the scientific experimenters so that they will be useful to both student and farmer. 335 pages, illustrated. Cloth, net, \$1.50. The Orange Judd Co., New York.

"The Call of the Land" by E. B. Andrews, Ph. D., D. D., L. L. D., Chancellor of the University of Nebraska. This is not a text, but a book containing a variety of topics of interest to farmers in general. Chancellor Andrews, although in a sense an expert, has not treated the subject in a narrow nor technical manner. The book may be easily understood by the average intelligent reader. To give some idea of the subject matter, five of the seventeen chapters treat of The National Importance of Rural Interests; Health as a Duty; Farmers' Vacations; The Beef Supply; and The Rising Generation. The other topics are no less important and interesting. 385 pages, illustrated. Cloth, net, \$1.50. The Orange Judd Co., New York.

"School Agriculture" by Milo N. Wood. This book was written to supply the needs of teachers of Agriculture in both graded and secondary schools. It treats in an elementary way of the subjects relating to Horticulture, Agronomy, Animal Husbandry, Botany, etc. In addition to the subject matter are numerous, simple, practical experiments which tend to correlate class room work with that of the home. 340 pages, illustrated. Cloth, net, \$.90. The Orange Judd Co., New York.

"The Young Farmer" by Thomas F. Hunt, Dean of the University of California. Here is a book containing twenty-two chapters on things that every young farmer starting out in life should know. The information will be no less valuable to older men as well. It is not a text, but a plain statement of Agricultural problems that are largely economic in nature. Prof. Hunt's wide experience as a farmer, and as a student of these problems make him a wise and safe counsellor. 280 pages, illustrated. Cloth, net, \$1.50. Orange Judd Co., New York.

"The Corn Crops" by E. G. Montgomery of Cornell University, is a new member of the Rural Text-Book Series. This book treats of every phase of corn growing under the general topics of Corn; The Corn Plant; Production as Related to Soils and Climate; Improvement and Adaption of the Corn Plant,

and Environment; Cultural Methods; and a fairly extensive treatment of the Sorghums. 346 pages, illustrated. Cloth, net, \$1.50. The Macmillan Co., New York.

Mr. Stanley F. Morse has offered, in his article, "**A Cow's Cost of Living**," which appeared in **The Country Gentleman** for Nov. 1, some suggestions as to how the farmer can cut down his feed bill by the use of home grown green feeds. It also offers some sample rations and seeding tables.

If you want to know what the Government is doing for the farmer's business and home, read "**The Story of the 4H Brand**" in the **Country Gentleman** for Oct. 25. It gives some idea of Uncle Sam's co-operation with the Boys' and Girls' Clubs, and what they are producing.

Some valuable facts may be gleaned from an article in **Hoard's Dairyman** for Nov. 21, by **John Y. Beaty**. It is concerned with "**The Most Profitable Sized Cow**." This is an important question with dairymen. It is illustrated by a table of figures.

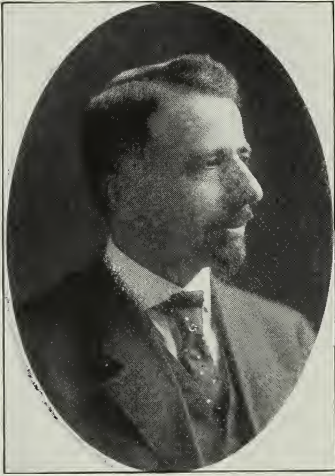
Prof. F. S. Jacoby has an article in the **Ohio Farmer** for Nov. 1, on "**Roup—The Scourge of Poultrydom**." It is interesting to note that vaccination, as a treatment for this disease, originated here, and that the serum used in this treatment is at present available only in this state. The results of vaccination have so far been very satisfactory.

Read what **William Harper Dean** has to say in the **Country Gentleman** for Oct. 25, on "**How Many Acres?**" He has shown two ways to compare the American with the European farmers. The second method gives results that are rather surprising to the person who has not given the matter careful consideration. To quote his words, "Too many people are barking up the wrong tree," when they discuss the subject.

Those interested in the propagation of fruit will find an instructive article on "**The Fine Art of Grafting and Budding**," by **A. C. Fleury**, in **The Country Gentlemen** for Nov. 22. Simple directions are given for both processes, together with illustrations. A formula for the making of grafting wax is also included.



ALUMNI WHAT THE BUSY GRADS ARE DOING



William Bradford Alwood was born in 1859 near Delta, Ohio. He attended the country schools and at the age of seventeen entered Delta High School, but adversity made it necessary for him to seek employment after two years in this school. At nineteen, he began teaching in the country schools and continued to take part in the farm work.

Three years later, he was elected Superintendent of Field Experiments at the Ohio Agricultural Experiment Station then at Columbus, Ohio. During the incumbency of this position, he took courses in Agricultural, Horticulture, Botany and Chemistry at Ohio State. In 1886 Professor Alwood was made Assistant Entomologist in the U. S. Department of Agriculture. While in the government service he took two years' work at Columbian, now George Washington, University.

In 1888 he was elected Vice-Director of the Virginia Agricultural Experiment Station and was assigned the Department of Horticulture and related work with injurious insects and plant diseases. Two years later his department was enlarged to include a full professional chair in the College. At that time the black rot of the grape and numerous pests of the orchards caused unusual havoc in the state. These questions were at once taken in hand by this new department, with the result that the present standard spray mixtures and method of using the same were worked out by Professor Alwood and demonstrated by practical work in the field. He had written several bulletins on "Orchard Technique" and "Orchard Studies" which as a consecutive piece of work stands without parallel in American Pomology. The author was voted the Silver Medal and Diploma of the French National Society of Agriculture as a recognition of his work in this line. The bulletins issued by Professor Alwood from the Virginia Station comprise more than sixty in number and cover the field of practical Horticulture, Pomology and Diseases of Plants.

After 16 years of service Professor Alwood severed his connection with the Virginia Polytechnic Institute and moved to Charlottesville, Virginia, where he is busily engaged developing his country place, "Stonehenge," and carrying on investigation of a special nature for the United States Department of Agriculture.

Various honors have come to Professor Alwood in recognition of his services to the science and education, among which may be mentioned:

Special Agent of the United States Department of Agriculture to study Enological work in Europe, 1900.

Gold Medal and Diploma, St. Louis, 1904.

Delegate to the International Congress on Viticulture, Angers, France, 1907, of which he was Vice-President.

His recent work of note is "The Discovery of the Occurrence of Sucrose in American Native Grapes and the Crystalization of Potassium Bitartrate in the Fruit of Grapes."

W. M. Bembower, '11, Christian College, Allahabad, India, writes that he just finished fifteen thousand miles of travel in India, including a splendid trip to Balluchistan on the N. W. Frontier. He extends his best wishes to his old friends through the columns of The Student.

M. L. Walcott, who attended Ohio State in '03 and '04, is at Valley Stream, N. Y., but expects to leave in the near future for South America, where he will be engaged in agricultural work.

C. M. Morris, two year course '12, is engaged in breeding Percherons and feeding hogs and cattle near Shandon, Ohio.

H. C. Barlow, '10, is farming near Hudson, Ohio. He has charge of his father's farm of 380 acres and feels that he is making good.

C. B. Durham, '12, was assistant secretary of the Indiana Apple Show held November 5-11. He is also connected with the Extension Department of the Indiana University.

W. L. Cleavenger, '06, is an instructor in Dairying at Ohio State.

Harry J. Jones, '13, and **Miss Myrtle B. Walker** were married Oct. 30. They will make their home in western Pennsylvania where Mr. Jones has the management of large farming interests.

G. A. Flickinger, '98, is farming near Concord, Tennessee. He was formerly connected with the Tennessee Experiment Station, having charge of Dairy work.

Eugene Ruth, '11, is head chemist for the Rex Spray Company at Toledo, Ohio. He was formerly connected with the Iowa Experiment Station at Ames, Iowa.

A. E. Bailey, '11, is farming the "home place" at Beloit, Ohio.

J. W. Ewart, 99, is farming near East Akron, Ohio.

R. R. Rankin, two-year course '12, is managing his father's farm at Elizabeth, Pa.

Richard Lee Shields, '07, is an instructor in Animal Husbandry and Dairying in Clemson College, South Carolina.

Thomas Butterworth Foster, '06, a former captain of basket ball at Ohio State, is manager of the Butterworth Dairy Farm at Foster, Ohio.

Dr. L. C. Maynard, **D. V. S.**, '04, was a recent visitor on the campus. He teaches Bacteriology and its relation to Dairying in Washington and Philadelphia.

Erskin Wright, '12, resides in Washington, D. C., where he is employed in the Bacteriological Laboratory of the U. S. Department of Agriculture.

H. E. Otting, '13, has recently been promoted to field manager of the John Wildi Co. condensery at Marysville, Ohio.

J. C. Quimby, '12, is teaching agriculture in Rochester High School, Rochester, Minn.

Secondary Agriculture

Devoted to the Interests of Agricultural Education in High and Common Schools

F. E. PERRY

It will be impossible for the teachers to take field trips this month and watch nature growing, out-of-doors. Instead, secondary agriculture must be conducted along different lines. Work in animal husbandry with exercises in stock judging, feeds and feeding, proper care and winter shelter for animals; also farm management studies, such as farm crop rotation, soil fertility, systems of drainage, proper fencing, etc., may be taken up at this time of year. Seed testing may be done and the different parts of the germinated and practical seed testing may be conducted with clover, alfalfa, timothy, Kentucky bluegrass, red top, wheat, rape, vetch, oats, barley, corn, and other seeds which the farmer will have occasion to sow in the course of the next year. Farmer's Bulletin No. 428, of the U. S. Department of Agriculture will be especially helpful in testing farm seeds.

A special session of the Ohio Legislature will be called by Governor Cox for next January and the primary theme at this time will be the report of the Rural School Survey and a consideration of measures which will better rural school conditions. One of the astonishing facts revealed in this work by Dr. Brittain is that our rural schools have not advanced one step in the past 25 years. Legislative action will probably be taken

up along three lines which are recommended as the result of the work of the Rural School Survey:

- (1) More efficient supervision.
- (2) Greater concentration.
- (3) More modern methods of giving certificates to teachers.

A Government Agent in charge of Farmers' Co-operative Demonstration Work writes from Alabama with reference to the Girls' Tomato Club Work:

"One little girl who lives on the top of a mountain cleared and fenced her own plot, dragging rails, one at a time, down the mountain side. As she lives alone with her grandmother she had no one to plow for her, so she and her grandmother dug the plot up with a grubbing hoe. The plants, having no fertilizer except a little barnyard manure, are slender and of a yellowish color and I am afraid she won't make many tomatoes. She split her ankle with the axe while chopping stakes for her plot."

One thousand boys and two hundred girls have this month gone from the farm to the White House. Now they are back at school again filled with a new vision of the glory of farm life. The far-reaching benefits of this trip are not to be measured today, but rather fifty years from today. Here's wishing for many more successful Corn Growing Contests.

COMMUNITY BETTERMENT THROUGH CO-OPERATION.

Every great movement requires organization. The mob of a thousand can be easily overcome by one hundred organized soldiers. The manufacturing concern which has a perfect system throughout can soon drive out of business the competing firm which lacks such system. Organization counts for efficiency. The railroad which is lax in the conduct of its business has damages to pay to those maimed and to the heirs

minate in great achievements. It is well known that many of our rural schools are not what they ought and what they can be, but as long as we look on as individuals and lament that we have such schools, they will ever remain so. We hope that somebody will do something for the betterment of our rural schools. But who is this somebody? My fellow teacher, it is each and every one of you. Citizens of Ohio, you who believe in a good and intelligent citizenship, it is each and every



A MODERN SCHOOL—EVEN THE CHILDREN SHOW CO-OPERATION.

of those killed in the wrecks. Whether it is the manufacturer, the merchant, the operator of a mine, the manager of a railroad or whatever the business may be, the one with the best organization is the one most likely to attain success.

Great systems are not evolved from the brain of any one man. Great inventions are but the climax of things done before by others. When minds co-operate that which is best in each is brought to the top. This is skimmed off and cast into the melting pot from which emanate the great thoughts which cul-

minate in great achievements. Is there not some one in each township who possesses those qualities of leadership which will bring the straggling hosts together? Can you not help turn on the light of a better school sentiment? The legislature will reflect the light in beneficent laws and appropriations if you will only turn it on.

Form associations for improvement in your schools. Let each township have a school improvement association. Get together and discuss what can be done in way of improvement. But let it not all be "discuss," but actually do

something. If your school house and grounds are in need of attention and your school board has no money, get the people together and have a general "clean up" and "fix up" day. Have everybody come, men, women and children. If the ash heap is in front of the school house, haul it away and show the teacher a less conspicuous place for the ashes if he does not know enough to find it for himself. If the yard is grown up with weeds, cut them. If the door of the outhouse is off the hinges, put it on. If the fences are in a tumble down condition, build them up. If the school yard is barren of all trees, go to some fence row, procure the trees and plant them. If the floor of the school house is dirty, scrub it. If the walls are in need of the same kind of application, apply it. All that is needed is water, which is free, soap which is cheap and "elbow grease." If a window light is out, get the board of education to buy the glass and putty and you put it in. If your school house chances to be one with a stone under each corner, so that the wind of winter can whistle under the floor, let some one haul the sand and stone while others will put them in the foundation to shut out the wind so that the children's feet will be comfortably warm when they are in school.

Let everybody do something. Let the women and children take some part, if the women do no more than prepare the coffee and spread an improvised table, and when dinner time comes how you will enjoy your meal. Even though some of you while eating may sit on a school desk, a nail keg, an inverted bucket, or some strangely constructed chair. It will be a safe guess to say that you never enjoyed a meal more in your life, and back of it all you have the feeling that you are doing some one good. How many a man would envy

you, a man who sits on a mahogany chair with his feet resting on a fine oriental rug beneath a mahogany table covered with Irish linen, with knives and forks and spoons of solid silver, with dishes of finest hand-painted china, with a chandelier of cut glass transforming the light from the electric lights into myriads of rainbows, with servants who answer his every beck and call. It is not splendor which makes us enjoy our food, but good cheer, a light heart, and a feeling that we have done good. Before you return to your homes have a picture taken of the entire group, each with some implement or utensil he has used during the day. One may have a mop in hand, another a bucket, a shovel, a hatchet, a saw, a wheel barrow or holding a team of horses. There will not be a one in the picture who will not have a feeling of pride when he shows it to his friends. On your way home you may discover that your roads need attention. Here is need of more co-operative work. At your subsequent meetings discuss how your road problem can be solved. After it has been thoroughly discussed, agree to unite and each man that has a team haul stones on the road while others quarry them and others pound them fine. Five years of such co-operation would produce a wonderful change for the better.

By the formation of such associations your schools will become social centers. Any question pertaining to the improvement of a community as a place to live is always interesting.

For the sake of variety your program may have some literary or agricultural or civic features added. If you are so unfortunate as to have a teacher who is a breathing corpse, you may be able to inject new life into his system. Your enthusiasm will set fire to a new zeal

and new enthusiasm in your teacher. The fact that you have done something for your school will cause you to take an ever-increasing interest in your school. You will have a better appreciation of its value and it will become nearer and dearer to you.

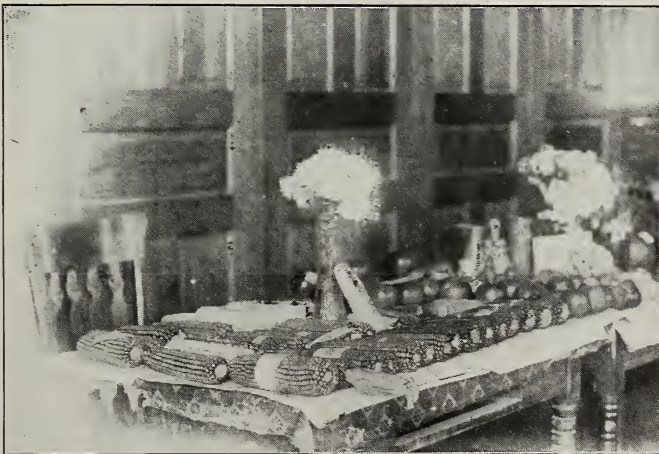
In order that each township organization may know what is being done in other townships, at least two representatives from each township should meet at some central point in the county. This federation of associations would be a clearing house in which the various representatives could tell of the good things can be taken home by the other representatives to their own people. At this federation many of the problems which may concern the county as a whole could be discussed and especially matters pertaining to school legislation. Every township representative should know the attitude of his people in legislative matters, so that when your voice is heard it is not the voice of a scattered people but the voice of your country. Remember, "United we stand, divided we fall."

FRANK W. MILLER,

State Supt. of Public Instruction.

RURAL SCHOOL SURVEY DAY.

November the fourteenth is a day which will go down in history as one of the big days of Ohio, not only because of the wonderful happenings of that day but also because of the tremendous results which are sure to follow. Governor Cox issued a proclamation calling on all mayors and all civic and fraternal organizations to co-operate and keep a light burning in the window of every school house in Ohio on the evening of this day. Throughout the entire state this was done—even in some of the neglected rural schools where the presence of myriads of inflammable cobwebs made a light dangerous to the safety of the building. Directed by the rays of light which pierced the darkness of the evening, the people of the entire school community gathered, not as a party or particular set, but just as plain folks, to talk about the school in which they are all interested. Lay delegates were elected to attend the big Educational Congress held in Columbus, December 5th and 6th, and the problems of the school were discussed. In many places this was the first community meeting which had ever been held in the neigh-



THE FIRST EXHIBIT OF A COUNTRY SCHOOL.

borhood, the idea being entirely new to the oldest inhabitant. There was a statewide revival of interest in schools—especially rural schools. Who can estimate the impetus which was started this day toward a greater community and co-operative spirit—the greatest need of our rural communities?

A MODEL RURAL SCHOOL.

A model rural school is soon to be established in Shawnee Township in Allen County. The proposed school, which is the result of joint recommendations of our State Superintendent of Public Instruction and W. A. Monahan, Rural School Specialist of the United States Department of Agriculture, will cost about \$70,000.

The township is composed of well-to-do farmers and there is every reason to believe that the vote which will be taken in a few months will be decidedly in favor of the issuing of bonds for the school.

This township, with a tax duplicate of \$8,000,000, is one of the richest in Ohio. All the members of the school board, from the president to the clerk, ride to the meetings in their own automobiles. They are determined to have a rural high school especially equipped for the teaching of agriculture, domestic arts and rural economics.

One feature of the new school will be a plot of 20 acres. Land for demonstration purposes is an essential part of a real agricultural high school, and with this plot of ground there will be ample opportunity for nursery, greenhouse and field crop demonstrations. The teacher of agronomy will have a splendid opportunity to show what the land will actually produce, not only to

the pupils, but also to the farmers of Shawnee Township. In addition to work with the soil there will be room for recreations and athletics. There will be the modern playground with its "giant's stride," parallel bars, swings, etc., and the football field and baseball diamond for the teams which will represent the school in interscholastic games. In athletic contests, as in no other way, can the future farmers learn the value of co-operation. On the athletic field the player must subdue all individuality, all desire to be prominent, playing not for himself but for the good of the whole. He must become simply a cog in the scoring machine. Team work is the great necessity of successful athletic as of successful farming. In providing for a plot of 20 acres the founders of the school have done much toward the making of a model school.

The other important factor in this proposed school is the provision that the Township High School shall be the Community House where will be held Teachers' and Farmers' Institutes and other meetings of like nature. The school house is to be the social center of the community. Here will be socials, lectures and basketball games to which the farmers may come and break the long monotonous winter evenings.

We believe that the new school will be the leaven from which the state will become dotted with similar model rural schools. School reform is contagious; it is in the very air. The establishment of the ruralized school in a rural community is one of the greatest needs of our civilization and we congratulate the founders and people of Shawnee Township upon their rural school.



For the New Year

The old year hath come and gone and left with us its gift of another harvest.

Each man hath garnered his share of golden grain, of weeds, of wild oats, and experience withal. **B**ut now the planting time returneth.

This year is thine and mine.

Choose well thy field; work it with energy; water it with faith and sow with a right good will. **A**nd whether the gain be great or small, if here and there thou droppest a humankindness, thy labor shall not have been in vain.





December News Notes

The Winter course of eight weeks opens Jan. 5th. Extra instructional force is being arranged for, and the schedule of four o'clock lectures is being planned. Buildings at the Fair Grounds will be in readiness for the new students. Encourage your young farmer friends back home to come. They will not regret it.

Begin to talk up the "Farmers' Week" for Feb. 2nd to 6th. It is a round-up week for the College of Agriculture. Farmers from all parts of the state are invited. Special lectures by noted speakers from other states have been provided. Apple and corn shows will also be held.

It is proposed by the agricultural faculty to expand the present two-year course in agriculture to cover a period of three years. It is not the purpose to extend the subject matter taught, but to reduce the length of the school year for the short course students. The course as proposed will run from November 1st to April 1st, thus making it possible for many young men who are engaged in actual farming operations to avail themselves of educational advantages during the winter period. It is expected that the new course will begin next year. In this event no first year work in the two-year course will

be given, but the incoming students will be put on the new schedule. For the benefit of those now in the course the second year work will be offered as at present. The proposed change will result in a course similar to those offered in the Schools of Agriculture in Nebraska and Minnesota. Great success has been attained in these states and we trust that similar results will be noted in Ohio.

The faculty committee on courses has suggested that an elective be placed in the Sophomore year of the four-year course in Agriculture. Should the suggestion be put into effect a rearrangement of courses would be necessary. The readjustment would include the following changes: One semester of Physics would replace one semester of Animal Husbandry in the Freshman year, Dairying would be placed in the second semester of the Sophomore year, Entomology would come the first semester of the Junior year, and Physiology and Entomology would be reduced to one semester each. It is uncertain as yet whether or not the recommendations will be accepted.

A new bulletin on "Farm Animals" and "Tillage and Cultivation," especially adapted in the study and teaching of elementary agriculture, has just been

issued by the College of Agriculture. It is written by Prof. A. B. Graham, who has had a great deal of experience in the field of agricultural teaching. It is sent to any person requesting it.

With the regular extension schools in session throughout the state, which requires the entire time of the faculty of this department, a great many requests for extension service have to be turned down at present. An increasing number of requests for instructors to judge exhibits or give lectures at agricultural gatherings have been pouring in to the Extension office. Until the extension school sessions are over, which is not until the middle of March, 1914, not all of these calls can be answered.

The next session of the Graduate School will be held at Columbia, Mo., during the month of July. This school is conducted every other year and is under the direction of the American Association of Agricultural Colleges and Experiment Stations. It is interesting to note that the first session was held in Townshend Hall soon after that building was completed.

The week of Oct. 27 was spent by Pres. W. O. Thompson and a number of University Trustees in inspecting the Universities of Michigan, Wisconsin and Illinois. The purpose of the trip was to learn of other methods in view of bettering Ohio State. These institutions are in the lead in progressiveness and in serving the people. In Wisconsin the university has established 150 social centers, showed the farmers how to drain and reclaim thousands of acres of swamp land, and have adopted many other progressive measures. All these

institutions receive larger appropriations than Ohio State, which will account largely for this progressiveness.

A party of Senators and Representatives visited Ohio State Nov. 21 in order to learn of the real condition of the University. All the buildings and departments were visited, the entire day being consumed. The Animal Husbandry Department gave a display of the live stock in the morning.

According to Miss Cockins, the Registrar, the Agricultural Societies were the only organizations on the campus to voluntarily enforce the student eligibility rules.

The subject, "Making a Success of a Large Stock Farm," was discussed by Chas. E. McIntire before the Agricultural Society last month. After the address the following men were appointed to fill vacancies on The Agricultural Student staff: R. L. George, I. P. Lewis, W. D. Will, H. E. DeVore, and L. L. Guard.

Second premium and the silver medal on bottle milk were won by the College of Agriculture at the National Dairy Show. The sample consisted of four bottles of whole milk prepared by students in the class in City Milk Supply, under Prof. Cunningham. The score was 98.8 out of a possible 100 points. D. B. Smiley, a member of the class, supervised the preparations of the samples. The aim was to handle the milk as little as possible and thus keep the bacterial count low. The milk was cooled after being placed in the bottles, the ordinary method of aeration being a source of infection by bacteria.



ANIMAL HUSBANDRY NOTES.

LIVE STOCK SHOW.

The third annual Live Stock Show of Ohio State University was held Friday evening, Nov. 21. As formerly, this show was under the combined control of the Animal Husbandry Department and the Saddle and Sirloin Club. The University Band added a touch of liveliness to the occasion.

A pleasing variety yet highly educational exhibit of live stock featured the program. Of special importance was the placing of a select bunch of Angus steers by the judging team, for which they gave reasons. Prof. Hislop, coach of the team, sustained them in their placing, but gave additional reasons in his own original metaphors for so doing. Other things of interest were the parades of the different breeds of live stock. While each class was in the ring short lectures were given by different professors of the department, explaining the types and breeds. Quite a unique feature was introduced when two students decorated, for show purposes, one of our finest examples of draft horse type.

It is useless to mention that this show, our young International, has become a necessity, not only for students of the department of Animal Husbandry, but for all who are interested in live stock; which, now firmly established, must be continued.

Ohio's Hero, winner of the Eastern

Percheron Futurity, Ohio State Fair, 1912, was sold in November by the Animal Husbandry Department. He was purchased by Prof. M. P. Jarnagin, who has charge of the horse work in the Georgia College of Agriculture at Athens, Ga.

THE GREEN COUNTY TRIP.

The International Live Stock Judging Team, in charge of Professor Wm. Hislop, made the annual trip to Green County, Nov. 13 to 15, inclusive. We went to Xenia Thursday morning and drove out from there by livery that afternoon and Friday.

Thursday afternoon we visited the farm of J. R. Bickett, who has a good breeding herd of Lincoln sheep. Next we stopped at the Grieve Bros.' farm. These men breed and show Cheviot sheep and Poland China hogs. The very best and latest types of the respective breeds were seen here and some of their individual animals were excellent. The J. H. Williamson farm was the next stop and here we found the large Oxford sheep. His whole flock is high class, but two aged ewes and two yearling rams stood out pre-eminently.

Friday forenoon we spent at O. E. Bradfute's, judging Aberdeen Angus cattle. Here we had a chance to work on some of the finest specimens of the breed. In the afternoon we went to R. B. Watts and the Cherry Bros., near Cedarville. Mr. Watt has Southdown sheep and Duroc Jersey hogs. His animals are excellent for both breeding and the show ring. J. W. Cherry breeds Hampshire sheep and H. H. Cherry Dorset sheep. The Dorsets were by far the best we have ever seen and certainly merit much praise.

Saturday forenoon we visited the W. H. Robbins farm, near Springfield. He

has a herd of 300 Duroc Jersey hogs and many of them are par excellence. It was the unanimous vote of the party that his aged boar, weighing 925 lbs., was the finest specimen of the breed they ever saw. Mr. Robbins accompanied the party back to Springfield and entertained them at dinner at the Commercial Club. Nineteen rings, a total of seventy-one animals, were judged on this trip.

Surely Green and Clark Counties have lots of good live stock, most of it being pure bred, and the team could go to no better place for a good workout. The party was treated with the best of courtesy every place we stopped and we are indeed indebted to these breeders for their kindness. The success of the trip was due largely to Mr. Williamson, who kindly made all arrangements for our visit to the different farms.

B. E. PONTIUS.

The Animal Husbandry Department purchased from the pens of the International, a number of wethers, including specimens of Southdowns, Shropshires, Dorsets and Cheviots. These will be for class-room work at the University, and especially for the Short Winter Course students.

In the November issue Mr. Hal H. Hill was made to say in his article, "The Pleasures of Owning a Pure-bred Herd," "we receive a monthly cream check of about three thousands dollars." Thousands should have read hundreds.

The International season of 1913 found Ohio State University equipped with a first class exhibit of live stock

consisting of cattle, sheep and swine. There were thirty-five head in all. Eight beef cattle were taken, including specimens of the Shorthorn, Angus, Red Poll breeds, and grades and crosses. Specimens of the Shropshire, Dorset, Southdown, and Cheviot breeds, with a few grades and crosses, comprised the sheep exhibit of seventeen head. The swine taken were six Berkshires and six Yorkshires. These animals all competed in the various fat classes and some were entered in the carcass contest.

Dean H. C. Price and Supt. of Extension A. B. Graham were the Ohio representatives at the annual convention of the Association of American Agricultural Colleges and Experiment Stations held in Washington, Nov. 12-14. Dean Price spoke on the subject of "How Can We Secure a More Serious Attitude of the Average Student Toward His Work," before the college division, while Supt. Graham attended in the interests of extension service.

Prof. A. G. McCall will visit the Blue Grass State during the first week in January. He has been engaged to judge the corn at the Kentucky State Corn Show. He will also give a lecture before the Kentucky State Corn Improvement Association.

The Agronomy Department recently added to their equipment an electrolytic bridge and helior. The former is used to determine the soluble salts in soils by resistance of a solution of the soil to an electric current. The helior is used to find the amount of heat received from the sun at various angles.

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Will organize a beginners' class Wednesday evening, Dec. 17th, 7:30 o'clock. First lesson.

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Applicants for Oliver Local Agencies must be earnest workers. They need not have had previous experience.

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THE STANDARD VISIBLE WRITER

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Oliver Agents are permitted to sell on our 17-Cents-a-Day Plan, which puts the Oliver in everyone's reach. Agents may even secure their own sample outfits on the 17-Cents-a-Day Plan and let their agency earnings help carry the deal.

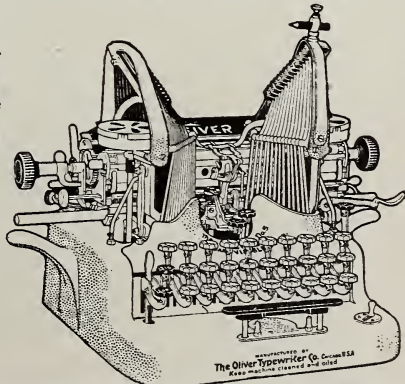
Oliver Agents are protected in exclusive selling rights in the territory given them. They own the local typewriter business.

When you apply, be sure to give some details about the typewriter sales possibilities of your town, village or city.

We like and reward promptness.

Full details of Agency Proposition, a specimen of Printype, the 17-Cents-a-Day Plan and other interesting information will be sent immediately on receipt of your application. (326)

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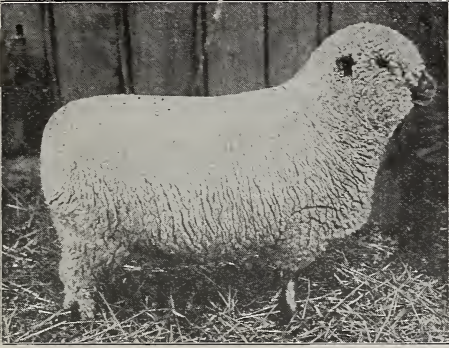
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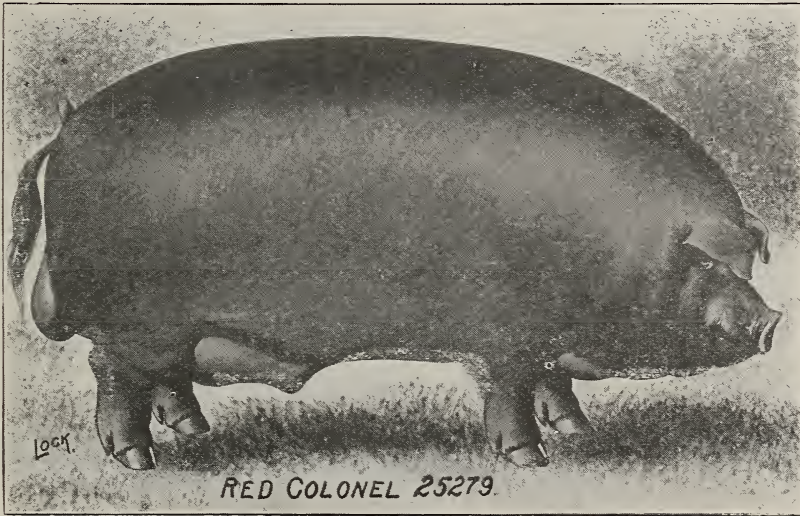
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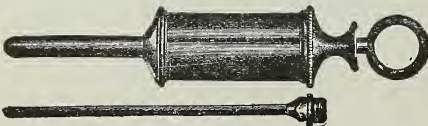


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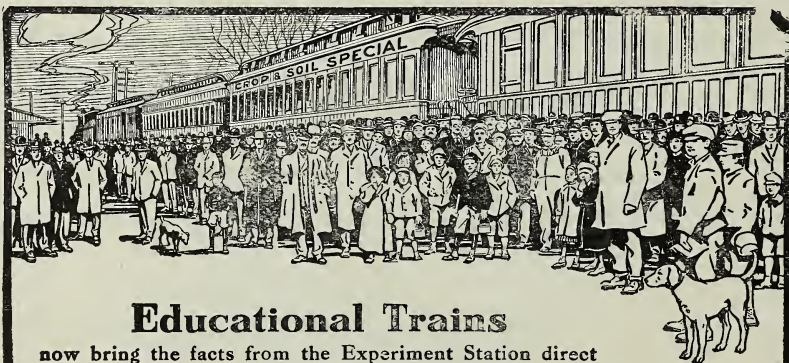
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It practically all passes through 100 mesh screen.

We will guarantee 90 per cent through 200 mesh, if desired.

It all analyzes $12\frac{1}{2}$ to 13 per cent phosphorus.

We will furnish 14 per cent phosphorus, through 200 mesh screen, if you order it.

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There is only one manure spreader which can spread an 8-foot strip from a 3-foot wagon body because the

WALTER A. WOOD FEARLESS MANURE SPREADER

is the only one with a **Circular Beater**. Yet the Fearless tracks with an ordinary wagon.

The Fearless lays the manure as thick on the edges as in the center of the strip.

The Fearless shortens the time of spreading and gets the best possible results from any manure. It spreads along fence rows, up against trees, and in out of way places other spreaders cannot reach.

Now is the time for you to study this machine and see how different it is from all other spreaders in results it secures.

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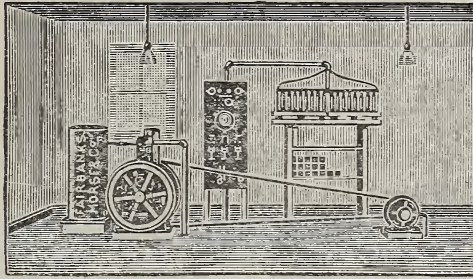
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Buy a Fairbanks-Morse Electric Light Plant For Your Home.



It not only lights your house, barn and yard at the turn of a button but with these plants it is easily possible to

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Run a Water Supply System, A real Vacuum
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With a Fairbanks-Morse Plant you can take the current direct from the dynamo or from the storage battery. The engine can be used for driving other machinery or water systems.

Operating Expense is Very Reasonable

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Fairbanks Scales, Oil and Gasoline Engines, Oil Traction Engines, Pumps, Water Systems, Electric Light Plants
Electric Motors, Wind Mills, Feed Grinders, Saw Frames, Marine Engines, Spray Outfits.

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Means more to us than it does to all other manufacturers of this product, for the following reasons:

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When we began the manufacture of Rock Phosphate the farmers were buying a quality that contained 200 to 240 pounds of Phosphorus per ton; and while there was usually no guarantee of fineness, the average product was ground so that 90 per cent. would pass a screen having 3,600 openings to the square inch.

We offered a product guaranteed to contain a minimum of 260 pounds of Phosphorus per ton, and ground so that 95 per cent. would pass a screen with 10,000 openings to the square inch.

We have not only maintained this guarantee, but the analyses of our past shipments show that we have given on each car-load 390 pounds of Phosphorus, worth \$12.00 to \$15.00, above our guarantee. In fineness the average of our shipments show 97 per cent. passing a screen with 10,000 openings per square inch.

THE BEST PRODUCT, BEST PRICES, AND BEST SERVICE

is always given by the manufacturer who is best able to furnish them, and who has most at stake in the future of the business; and that the Ohio farmer appreciates the truth of this statement is shown by the fact that we are now supplying over one-half of the total Rock Phosphate used in your state.

If you are not one of our customers it is because you have not given us an opportunity to prove our claims to you.

Write us to-day for prices and guarantees, and we will convince you that the best interests of your soil and your purse demand the purchase of "Daybreak Rock Phosphate."

FEDERAL CHEMICAL COMPANY GROUND ROCK DEPARTMENT

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Woven Wire Fences.

A Galvanizing of Great Durability,
Originally Developed and to be
Found Only in the American
Steel & Wire Company's
Fences.

THE American Steel & Wire Company is the first to develop a thoroughly Galvanized Wire. It is laid on with a thicker coat, a quality more refined, and a deeply adhesive contact of the zinc and the steel that solidly unites the two metals, highly flexible without injury, and having a finish and weather resistance unequalled—a thoroughly galvanized wire.

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Years ago, in making and galvanizing steel wire, we searched out the reason for this spasmodic super-excellence, and found it to be the chance co-ordination of a high state of perfection, in the finest detail, of man, methods, machinery and materials. We then mastered these fickle elements of chance by the employment of a tremendous manufacturing organization and brought them under control for steady and continuous production.

We now announce the final completion of our facilities for the extensive and permanent production of this thoroughly galvanized wire. We shall use it in the manufacture of our celebrated woven wire fences, the **AMERICAN FENCE**, the **ELLWOOD FENCE**, the **ROYAL FENCE**, the **ANTHONY FENCE** and all our other fences.

These fences are adapted for all field, farm and poultry uses, and possess superior structural advantages in quality of steel and fabric. Dealers everywhere throughout the country display these fences and will quote lowest prices. They cost no more than other fences, and considering the **EXTRA LARGE** and **HEAVY WIRES** used, and the exclusive use of new **THOROUGH GALVANIZING**, make them especially attractive as the best and cheapest fences.

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—cheaper than wood and more durable.
Send for booklet of uses.

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Acid Phosphate, Complete Fertilizers and Animal Tankage
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Our plant is modern and our shipping facilities unsurpassed. Write us for prices on your requirements for mixed goods or materials.

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on earth wherever grain is grown."

**"The Superior
feed sows
every seed."**

Superior Drills are
made in every style and in
all sizes, from one horse up.

It makes no difference what your seeding conditions are, you can rely on the Superior to do that work as it should be done. Superior Drills are sold under a warranty that absolutely protects the purchaser. Send for the Superior Catalogue. Read it carefully and then go to your local dealer and insist on seeing the Superior Drill.

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WITH A MYERS BUCKET, BARREL OR POWER OUTFIT

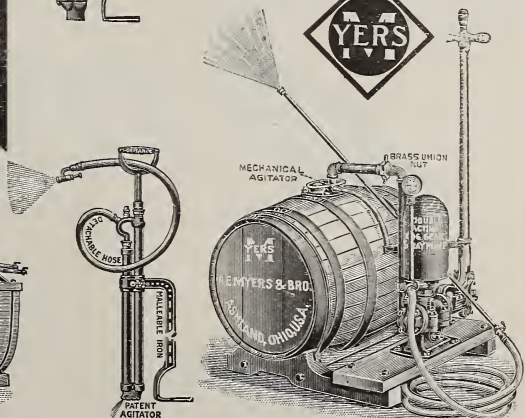
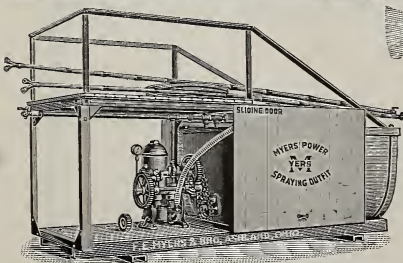
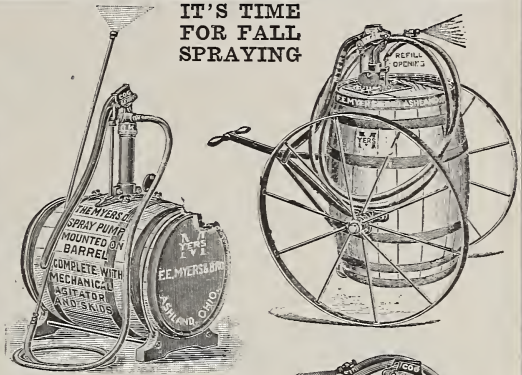
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Year after year, for over 25 years, we have been building MYERS SPRAY PUMPS, perfecting wherever possible and adding many new and proven outfits to aid the man that sprays and makes it pay to Spray Myers Way.

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FOR FALL
SPRAYING

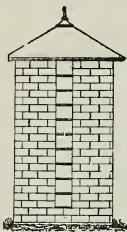


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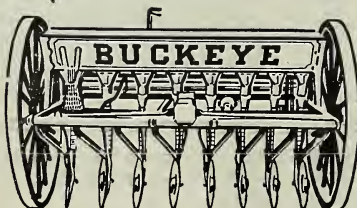
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a wise buy"*



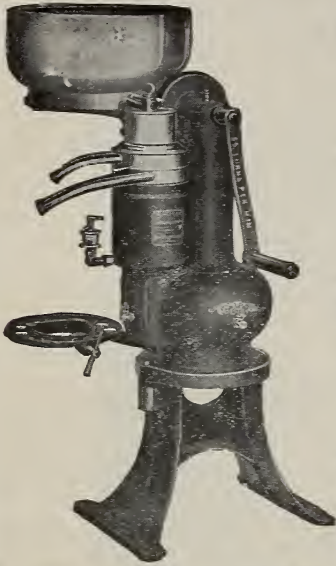
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500 lbs.....\$75.00 900 lbs.....\$ 90.00

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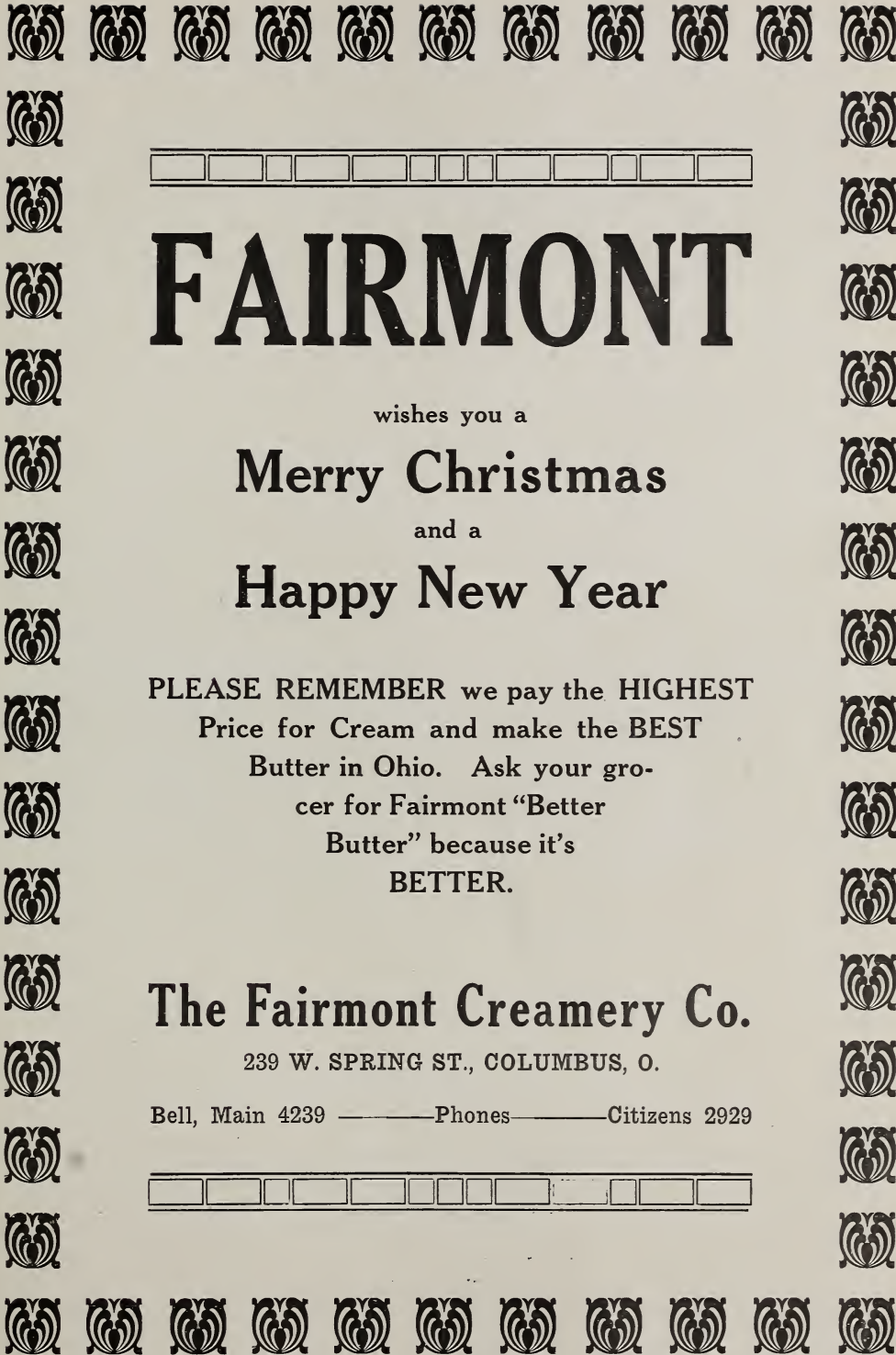
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Build a Nateo Everlasting Silo and end your ensilage troubles forever. It's the most attractive as well as most durable silo you can erect—a valuable addition to your permanent farm buildings.

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DE LAVAL

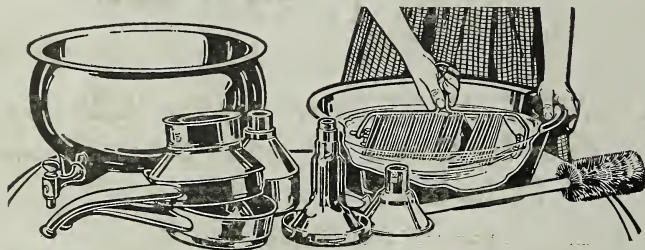
CREAM SEPARATORS

Are Easiest to Wash

The construction of the De Laval bowl is such that it can be completely taken apart for washing.

The discs, bowl parts and tinware have no tubes, crevices, holes or corrugated surfaces such as are found in other machines and which are very hard to clean.

The De Laval discs are washed as a single piece and the whole machine can be thoroughly



Cleaned in Five Minutes

There is no part of the De Laval bowl which cannot be easily reached and seen, so that the operator can always tell whether or not every part has been properly cleaned.

The ease with which the De Laval can be thoroughly washed and kept in a sanitary condition is one reason why creamerymen prefer De Laval to other separator cream, and is likewise one of the reasons why butter made from De Laval cream has always scored highest at the National Dairy Show for over 20 years.

The 72-page De Laval Dairy Hand Book, in which important dairy questions are ably discussed by the best authorities, is a book that every cow owner should have. Mailed free upon request if you mention this paper. Large De Laval catalog also mailed upon request. Write to nearest office.

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